THE

CINCINNATUS;

DEVOTED TO

SCIENTIFIC AGRICULTURE AND HORTICULTURE, RURAL EDUCATION, AND TO THE IMPROVEMENT OF RURAL TASTE.

EDITED BY F. G. CARY.

PUBLISHED AT FARMERS' COLLEGE,

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44

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THE CINCINNATUS.

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ART. I.—THE AGRICULTURAL DEPARTMENT OF OUR GOVERNMENT—DISTRIBUTION OF SEEDS, ETC.

ON meeting with one of our Congressmen elect, a few days since, he knowing that we were engaged in experimenting on our farm connected with our college, kindly offered us a large package containing a number of choice kinds of wheat, such as Blue Stem, Turkish Flint, etc., nicely labeled and sent from the United States Patent Office. Another of our leading Horticulturists of Cincinnati, requested us to call, as he had received a large quantity of seeds that he knew not what to do with, and ascertain whether they would be of any value to us. But as we—on application—had obtained these, with many others, from head quarters; besides, as the season had passed for sowing many of them, we declined the kind offer. If these men, thought we, know not what to do with valuable seeds, distributed at great expense by our government, what must be the fate of most of the valuable seeds sent all over our country to Presidents and Secretaries of Agricultural Societies, to our distinguished as well as obscure farmers? We were hence led to reflect how many bushels of wheat has our government imported from the Baltic or Black Sea, or from Asia, at the expense of agents in collecting, transporting, labeling and distributing, to be fed, it may be, to some favorite Shanghai or Burampooter, of the poultry yard of the consignee, who happens to be the friend or constituent of the Congressman, who has been entrusted with the distribution!

We have heard many exclaim, 'what shall we do with a thimble full of wheat, although it may really come, as it purports, from Mount Olympus, or from the Sarcophagus of an Egyptian mummy two

thousand years old! We have not the time or patience to attend to such small matters! Stock, stock! is what most concerns us. We do n't want any better wheat than we have got, and then who knows whether it is genuine?' I obtained nicely labeled from this same Patent Office, a most miserable kind of kale, for what purported to be an extraordinary kind of cabbage. Now this whole system calls for amendment or entire abrogation. Under the direction of the present able officer, Mr. D. J. BROWNE, there has been a good degree of reform in this and other particulars. But the entire plan and organization of the department falls far below what the character of our government, and demands of the country require. And it is to be feared it will be no better, so long as agriculture shall be treated and followed as a very rude and simple art—so long as among our scientific and literary institutions, there shall not be found sufficient interest or means to establish on a liberal scale those for the promotion of the science of Agriculture, not only in theory, but in practice. The distribution of seeds, cuttings, etc., as now practiced, will be a casting of bread upon the waters, that can never be gathered, and must inevitably prove a waste, and result in failure. There may be a few exceptions. There are men of science, men of curiosity, possessing means and leisure, who will experiment to some profit. Of these, our Patent Office reports furnish a few, *very few* examples. But even in respect to these, the Public are making a draft upon them which they are under no legal or moral obligation to honor, and one which this money-loving age will rarely regard, however urgently pressed. In most cases, it will result in time and money wasted. To reduce to the proper tests of experiment these seeds, plants, tubers, etc., gathered from abroad, we must necessarily have the appropriate means, skill and scientific knowledge, in order to arrive at any valuable result. We must by some means more effectually unite science with practice, otherwise, true progress must be slow.

Without science, without a *system* based upon certain great fundamental truths, each one is left to experiment for himself; and when the experiment is made, nothing is established, no foundation is laid, no principle is demonstrated, which shall be of benefit under different circumstances, or to the community at large. According to the present order of things, a farmer who cultivates one kind of land, writes to a paper that he has adopted a certain mode of culture for a particular kind of crop, and has met with success, and hence recommends it to all, as the result of his 'experience.' An-

other, with soil totally different, is highly incensed at this, for he has tried the same mode, and utterly failed. He therefore sits down, and with a caustic pen, contradicts him. Now the strife might go on forever, unless science stepped in and settled the question, just as she has done in former astronomical and other speculations. She tells us soils are different in their composition, one requiring for instance, lime to produce a wheat crop, and another not needing any such application. She takes into view all attending circumstances, and estimates their bearing. Two farms can not, under ordinary circumstances, be cultivated exactly alike. The only way is to establish general principles by the aid of science, and not trust to individual experience. By an article in our last number, we must have discovered that science had not yet told us where a seed should be placed to produce best, under all circumstances; and that after six thousand years of the world's history, we have an uncertain practice recommending from two to six inches in the sowing of our great cereal—wheat—which every farmer cultivates, and about which every farmer is *very wise.*

It is astonishing, after the boasted light of the nineteenth century, that the combined wisdom of the world can not tell where a seed is to be lodged! or even how a tree is to be set, that he can not find equally good practice opposing him. Yet as remarkable as the fact may appear, it is nevertheless true. Without science, without proper system, all the expenditures of our government will be of little avail. To secure in any good degree the results aimed at, we must have an entirely different arrangement—the plan, or something like, which was proposed by the Committee on Agriculture, near the close of the last session of Congress. The bill introduced, proposes the organization of a distinct Department of Agriculture, officered and conducted by the general government; claiming that its importance is sufficient to justify all the outlay necessary to carry out its various salutary provisions. Upon the discussion of its various provisions, we shall not here enter. But the utility and necessity of something more efficient than we have at present, must be apparent to all. It has appeared evident to us, that our present arrangement might be greatly improved, by encouraging those agricultural institutions already in existence in the different States, by making them agents in reducing to proper tests the seeds distributed, and requiring of them reports upon their experiments, at least annually. If this department did not deem it expedient to embrace in their

plan a farm and botanic garden, some such arrangement must at once be seen to be obviously necessary. Let them distribute to such institutions as might be selected in the different States—possessing the soil, climate, etc., best adapted to such—seeds, plants, etc.; and let them be tested under the eye and by the direction of scientific men, and then from these annual reports whatever was valuable could be incorporated into the general report of the department, and then sent broad-cast to enlighten and improve, instead of to distract and bewilder.

For faithful services thus rendered, it would be a great encouragement, should our government make some compensation through the heads of this department. If it was feared that the claimants would soon become too numerous, let the requisitions in order to obtain it, be such in the outlay for apparatus, grounds, and endowment funds, on the part of the State, or by private munificence, as would preclude any but those who were prepared to render essential service, and then if the number be great, the advantages would be correspondingly so; and though the sum paid should be considerable, the investment would undoubtedly be found judicious, and return ten fold to the treasury, from the substantial progress thereby made. From such institutions, located in different parts of the Union—with proper reference to climate, productions, etc.—would be produced more substantial results, than all the expenditure now made. Indeed, some such plan must be entered upon, if any valuable results are to be secured. And who will say that it is not time that the fostering hand of government was thrown around this great productive interest? Look for a moment at its extent. According to the Census of 1850, the cash value of farms and agricultural machinery, is put down at three thousand, five hundred millions of dollars. It may now safely be estimated at five thousand millions of dollars, and their annual product at two thousand millions. The agriculturists of the United States *have more than double the amount of capital invested in the simple item of fences, than there is invested in every, and all, the manufacturing departments combined.* Four-fifths of our people are engaged in rural pursuits, and by their labor are feeding and clothing over twenty-seven millions of people. They produce one hundred million bushels of potatoes, three hundred million bushels of oats, one hundred and fifty million bushels of wheat, eight hundred million bushels of indian corn, one billion, six hundred million pounds of cotton, one hundred and ninety million pounds of

tobacco, and the less important vegetables, in untold quantities. What a picture is here presented of our national prosperity! of our national thrift. And many are ready to say this is doing well enough —such an interest needs no protection. But by looking at another class of statistics, our minds will undergo a change, for by the statistics furnished by the Commissioner of Patents, we find that in the great State of New York, while the number of acres of land in cultivation has vastly increased, the agricultural product has decreased. According to these statistics we find there were in the State of New York, in 1845, five hundred and five thousand horses, and in 1850 but four hundred and forty-seven thousand and fourteen; being a decrease, in five years, of fifty-eight thousand one hundred and forty-one; the decrease of the number of cows for the same period, was sixty-eight thousand and sixty-six; of other cattle, one hundred and twenty-seven thousand, five hundred and twenty-five; of swine, five hundred and sixty-six thousand and ninety-two; of sheep, two millions, nine hundred and ninety thousand, six hundred and twenty-four—nearly half—and but a slight increase in the great staples of grain, and other agricultural products.

In speaking of Virginia, Professor Leibig says: "Harvests of wheat and tobacco were obtained for a century, from one and the same field without the aid of manure; but now whole districts are converted into pasture, which without manure produces neither wheat nor tobacco. From every acre of this land there were removed, in the space of one hundred years, *twelve hundred pounds of alkalies*, in leaves, grain and straw." This same system of farming, which has exhausted the fertility of Virginia, has done its fatal work in all the New England States. The soil in these States is now utterly incapable of producing wheat as a remunerative crop. In 1850, by the Census report, the State of Connecticut produced but forty-one thousand, seven hundred and sixty-two bushels of wheat, while in 1840 it produced eighty-seven thousand bushels. Massachusetts, but thirty-one thousand, two hundred and eleven; in 1840, one hundred and fifty-seven thousand, nine hundred and twenty-three bushels. And the whole state of Rhode Island, once famed for her fertility, produced but three thousand and ninety-eight bushels; in 1840, twenty-six thousand, four hundred and nine. In speaking of this vast depletion of the soil, it is declared in an official report made to Congress, that one thousand million of dollars would not more than restore to their original fertility the one hundred million

acres of land in the United States, which have been already subjected to this exhausting and depleting process. What a deplorable condition is here presented of the inheritance which we propose to transmit to our posterity. Instead of having our patrimony greatly improved, which is altogether possible, we have wasted its substance, and rendered it certain that if the same course is persisted in, starvation must finally ensue. And still the spoiler is on his track, and traveling with giant strides westward.

Shall we say that to protect these mighty interests Congress has no power? On the contrary the constitution declares that 'Congress shall have power to provide for the common *defense and general welfare* of the United States.'

The remedy for all this must be sought in science. The principles must be developed, and practice established by scientific men. Until Science shall have performed for Agriculture what she has for the Arts, it will continue to exhibit naught but confusion worse confounded; and our agricultural papers multiplied a thousand fold, will only add, to the already labyrinthian modes and perplexities. We have papers now publishing for the ninety-ninth time, the same crude nonsense. One supporting pertinaciously the idea that wheat turns to chess; another, that *shade* is all that is necessary to give nourishment, and insure large crops, according to which theory if we could take a blanket and cover up our fields from the noxious rays of the sun, it would do away with all necessity for any further research, and any such institutions as we are attempting to establish. If proper research was had, and the true principles of tillage developed, we should have solid ground to rest upon, some uniform practice to guide us, instead as now, of one recommending to put in our wheat two inches, another three, another six. One to plow it in by all means, another harrow, another drill, all claiming superiority, and citing a multitude of examples.

Until institutions are established uniting theory and practice, we have little to expect. And until our government has such co-operation and assistance, it were about as well the seeds distributed meet the fate that many of them now do, as otherwise; or what would perhaps be preferable, that an immense poultry yard be constructed in one corner of the Capitol grounds, and thus save the labor of distribution, and such ultimate disposition of it, after it has passed through the mail-bags.

From the New England Farmer.

Art. II.—SCIENCE AND THE FARMER.

The farmer should understand geology. He should know the composition and structure of the rocks which constitute so large a part of the soil which he cultivates. He should know the nature of the rocks in all the region around him, and what kind of soil they will produce, when worn down by the action of the sun and rain and frost. If the mountains and hills that look down upon his farm contain marble, or granite, or slate, or iron, he should know that these minerals, which have been upheaved from the bowels of the earth, are being annually spread over the valleys and plains that lie at their feet, by the drenching rains and melting snows which wash their declivities. He should know how to select those soils whose mineral composition is best suited to particular crops, and to determine when they contain mineral elements that unfit them for his purposes.

He should know what is a sandy loam, and what a clayey loam, and of what each consists. He should know what is an alluvial soil, and what mineral elements it contains in any given locality. The farmer should understand the leading principles of chemistry in general, and all about those particular principles that are applicable to agriculture. The earth is not a mere dead mass of matter. It is a vast chemical laboratory, filled with various and strange materials, full of activity and motion, in which composition and decomposition and new combinations are constantly going on. To-day it receives accessions and influences from the heavens, to-morrow it throws off newly-formed elements, that are carried into the ocean, and deposited upon distant shores. The earth is almost a living creature, and when quickened by atmospheric influences, she brings forth innumerable living things, infinitely diversified in form, in hue and fragrance, and each derives from her bosom the nutriment that is suited to its character and wants; truly is she called the mother of all living things. The cultivator of the earth should surely know something of its nature, its elements, its affinities, and its diseases.

The farmer should be a botanist. This is the natural science of the agriculturist. Can he be content to spend his life in ignorance of the names and properties and distinguishing characteristics of the trees and shrubs and flowers that are so lavishly spread around

him, painting his fields and woods with their thousand hues, and rendering his outward world a scene of beauty? And how does the seed germinate, and the tender leaf unfold itself? and in what order are the several parts of the flower developed? How is the blossom impregnated and the fruit formed? What will injure and what will improve each plant? How may plants be improved by ingrafting, by innoculation, by crossing? How may new varieties be obtained, and old ones be made better? Can the farmer be content to leave questions such as these unanswered?

But vegetable physiology alone should not satisfy him. He has in his charge, and appropriated to his use, some of the noblest animals upon the earth. They are his companions through life, and by their labor, or the products of their bodies, contribute largely to his happiness and comfort. He should make himself acquainted with the structure and use of their various organs. He should know how often their hearts beat, and how often they breathe in a state of health, that he may judge how far, at any time, they deviate from the healthy standard. He should know the absolute and relative position of all the organs, that he may the better determine the seat of disease, and with more certainty apply his remedies. He should know how the fat is deposited; how the bones are formed, and how the muscles; and what food or treatment will contribute to the rapid growth of each; and then the knowledge of different races, and their curious histories, and their several peculiarities, is all highly important to the breeder of stock. The farmer should have a knowledge of the diseases of his animals, and of the proper remedies, and should be able to perform all the more common surgical operations. Many a fine animal has been slaughtered, because its owner could not set a bone, or bandage a wound.

The farmer should carefully observe the habits of animals, birds and insects. Who else has so good an opportunity as he to do this? He should especially study the habits and nature of insects that are injurious to vegetation, that he may be the better able to defend his crops from their ravages. He can scarcely be expected to be familiar with the whole subject of entomology; but he should carefully study those insects that are found in his own premises, and note with accuracy the result of his observations for the benefit of himself and neighbors.

The farmer should understand the general principles of mechanics, and particularly those that relate to the structure and use of ag-

ricultural implements. In ancient times, no man was considered an accomplished plowman, until he could construct his own plow. In modern times, the division of labor, and the use of machinery, has rendered this qualification unnecessary. But he should understand the true principle upon which the plow, and every other implement he uses, should be constructed, that he may discover any defects in their working, and be able to suggest any improvements which they need. He should be able to use tools in a workman-like manner, and thus save many a blacksmith's and tool-maker's bill, which he would otherwise have to pay. He should make himself familiar with all these, and many other branches of scientific knowledge. The study of these subjects will be to him and unfailing source of pleasure, and can not fail to improve and refine all his powers and sensibilities. There is no branch of knowledge that will not be serviceable to him. There is none from which he can not derive some hint or law that may be applicable to some one of his varied pursuits, and they will all tend to refine his feelings, to enlarge his intellect, and to elevate him in the scale of being, and there is scarcely a branch of physical science that may not be made to put money in his pocket, if this is the leading object which he is pursuing.

KOSCIUSKO'S HORSE.—There is an interesting fact related of the hero of Poland, indicative of his customary practice of almsgiving. Wishing to convey a present to a clerical friend, he gave the commission to a young man of the name of TELTNER, desiring him to take the horse which he himself usually rode. On his return, the messenger informed KOSCIUSCO that he would never again ride his horse unless he gave him his purse at the same time; and on the latter inquiring what he meant, he replied:

" As soon as a poor man on the road takes off his hat and asks charity, the animal immediately stands still, and will not stir until something is bestowed on the petitioner; and as I had no money about me, I had to feign giving, in order to satisfy the horse and induce him to proceed."

Art. III.—VASTNESS OF CREATION.

We extract the following from the Hon. Edward Everett's oration, at the dedication of the Dudley Observatory, in Albany, New York:

"But it is when we turn our observations and our thoughts from our own system, to the systems which lie beyond it in the heavenly spaces, that we approach a more adequate conception of the vastness of creation. All analogy teaches us that the sun which gives light to us, is but one of those countless stellar fires which deck the firmament, and that every glittering star in that shining host, is the center of a system as vast, and as full of subordinate luminaries as our own. Of these suns, centers of planetary systems, thousands are visible to the naked eye, and millions are discovered by the telescope. Sir John Hershell, in the account of his operations at the Cape of Good Hope, (p. 381,) calculates that about five and a half million of stars are visible enough to be distinctly counted in a twenty foot reflector in both hemispheres! He adds, 'that the actual number is much greater, there can be little doubt.' His illustrious father estimated on one occasion, that one hundred and twenty-five thousand stars passed through the field of his forty feet reflector in a quarter of an hour. This would give twelve millions for the entire circuit of the heavens in a single telescopic zone; and this estimate was made under the assumption that the nebulæ were masses of luminous matter not yet condensed into suns.

These stupenduous calculations, however, form but the first column of the inventory of the universe. Faint white specks are visible even to the naked eye of a practical observer, in different parts of the heavens. Under high magnifying powers, several thousand of such spots are visible; no longer, however, faint white specks, but many of them resolved by powerful telescopes into vast aggregations of stars, each of which may, with propriety, be compared with the Milky Way. Many of these nebulæ, however, resisted the power of Sir William Hershell's great reflector, and were accordingly still regarded by him as masses of unformed matter, not yet condensed into suns. This, till a few years since, was, perhaps, the prevailing opinion; and the nebular theory filled a large space in modern astronomical science. But with the increase of instrumental power, especially under the mighty grasp of Rosse's gigantic reflector, and

the great refractors at Pulkava and Cambridge, the most irresolvable of these nebulæ have given way; and the better opinion now is, that every one of them is a galaxy, like our own Milky Way, composed of millions of suns. In other words, we are brought to the bewildering conclusion, that thousands of these misty specks, the greater part of them too faint to be seen by the naked eye, are, not a universe like our solar system, but each a 'swarm' of universes of unappreciable magnitude. (HUMBOLDT, COSMUS, iii., 44.) The mind sinks overpowered by the contemplation. We repeat the words, but they no longer convey distinct ideas to the understanding.

But these conclusions, however vast their comprehension, carry us another step forward in the realms of sidereal astronomy. A proper motion in space of our sun and the fixed stars, as we call them, has long been believed to exist. Their vast distances only prevent its being more apparent. The great improvement in instruments of measurement within the last generation, has not only established the existence of this motion, but has pointed to regions in the starry vault, around which the whole solar and stellar system, with its myriad attendant planetary worlds, appears to be performing a mighty revolution. If, then, we assume that, outside of the system to which we belong, and in which our sun is but a star like Aldebaran or Sirius, the different nebulæ of which we have spoken, thousands of which spot the heavens, constitute each a distinct family of universes, we must, following the guide of analogy, attribute to each of them also, beyond all the revolutions of their individual attendant planetary systems, a great revolution, comprehending the whole; while the same course of analogical reasoning would lead us still further onward, and in the last analysis require us to assume a transcendental connection between all these mighty systems; a universe of universes, circling round in the infinity of space, and preserving its equilibrium by the same laws of mutual attraction which bind the lower worlds together.

It may be thought that conceptions like these, are calculated rather to depress than to elevate us in the scale of being; that banished as he is by these contemplations to a corner of creation, and there reduced to an atom, man sinks to nothingness in this infinity of worlds. But a second thought corrects this impression. These vast contemplations, are well calculated to inspire awe but not abasement. Mind and matter are incommensurable. An immortal soul, even while clothed in 'this muddy vesture of decay,' is in the eye of God and

reason, a purer essence than the brightest sun that lights the depths of heaven. The organized human eye, instinct with life and soul, which, gazing through the telescope, travels up to the cloudy speck in Orion's sword, and bids it blaze forth into a galaxy as vast as ours, stands higher in the order of being than all that host of luminaries. The intellect of NEWTON, which discovered the law that holds the revolving worlds together, is a nobler work of God than a universe of universes of unthinking matter.

If, still treading the loftiest paths of analogy, we adopt the supposition—to me, I own, the grateful supposition—that the countless suns, are the abodes of rational beings like men, instead of bringing back from this exalted conception a feeling of insignificance, as if the individuals of our race were but poor atoms in the infinity of being, I regard it, on the contrary, as a glory of our human nature, that it belongs to a family, which no man can number, of rational natures like itself. In the order of being, they may stand beneath us, or they may stand above us; *he* may well be content with his place, who is made 'a little lower than the angels.'"

AN INFIDEL REBUKED.—An Infidel, boasting in a published letter that he had raised two acres of 'Sunday corn' which he intended to devote to the purchase of Infidel books, adds: 'All the work done on it was done on Sunday, and it will yield some seventy bushels to the acre; so that I do 'nt see but that Nature or Providence has smiled upon my Sunday work, however the priests or the Bible may say that work done on that day never prospers. My corn tells another story.' To this the editor of an agricultural paper replies: 'If the author of this shallow nonsense had read the Bible half as much as he has the works of its opponents, he would have known that the Great Ruler of the Universe does not always square up his accounts with mankind in October.'

Art. IV.—THE COW TREE OF SOUTH AMERICA.

In the valley of Aragua, Humboldt first saw the celebrated 'Cow-tree,' the existence of which he had previously doubted, and of which he gives the following beautiful description:

"When incisions are made in the trunk of this tree, it yields abundance of a glutinous milk, tolerably thick, devoid of all acidity, and of an agreeable and balmy smell. It was offered to us in the shell of a calabash. We drank considerable quantities of it in the evening before we went to bed, and very early in the morning, without feeling the least injurious effect. The glutinous character of this milk, alone renders it a little disagreeable. The negroes and the free people, who work on the plantations, drink it, dipping into it their bread of maize or cassava. The overseer of the farm told us that the negroes grow sensibly fatter during the season when the *Palo-de-vacæ* furnishes them with most milk. This juice, exposed to the air, presents at its surface a strongly animalized substance, yellowish, stringy, and resembling cheese.

Amidst the great number of curious phenomena, which I have observed in the course of my travels, I confess there are few that have made so powerful an impression on me, as the aspect of the cow-tree. Whatever relates to milk or to corn, inspires an interest which is not merely that of the physical knowledge of things, but is connected with another order of ideas and sentiments. We can scarcely conceive how the human race could exist without farinaceous substances, and without the nourishing juice which the mother contains, and which is appropriated to the long feebleness of the infant. The amylaceous matter of corn—the object of religious veneration among so many nations, ancient and modern—is diffused in the seeds, and deposited in the roots of vegetables; milk, which serves as an aliment, appears to us exclusively the produce of animal organization. Such are the impressions we have received in our earliest infancy; such is also the source of that astonishment, by the aspect of the tree just described. It is not here the solemn shades of forests, the majestic course of rivers, the mountains wrapped in eternal snow, that excite our emotion. A few drops of vegetable juice recall to our minds all the powerfulness and the fecundity of nature. On

the barren flank of a rock grows a tree with coriaceous and dry leaves. Its large woody roots can scarcely penetrate into the stone. For several months of the year, not a single shower moistens its foliage. Its branches appear dead and dried; but when the trunk is pierced, there flows from it a sweet and nourishing milk. It is at the rising of the sun that this vegetable fountain is most abundant. The negroes and natives are then seen hastening from all quarters, furnished with large bowls to receive the milk, which grows yellow, and thickens at its surface. Some empty their bowls before they leave the tree, others carry the juice home to their children."

SINGING.—The American physician, Dr. RUSH, thus speaks of the utility of singing, not only as an accomplishment, but as a corrective of the too common tendency to pulmonic complains. "Vocal music," says this celebrated writer, "should never be neglected in the education of a young lady. Besides preparing her to join in that part of public worship which consists in psalmody, it will enable her to soothe the cares of domestic life; and the sorrows that will sometimes intrude into her own bosom, may all be relieved by a song, when sound and sentiment unite to act upon the mind. I here introduce a fact which has been suggested to me by my profession, and that is that the exercise of the organs of the breast, by singing, contributes very much to defend them from those diseases to which the climate and other causes expose them. The Germans are seldom afflicted with consumptions; nor have I ever known but one instance of spitting blood among them. This, I believe, is in part occasioned by the strength which their lungs acquire by exercising them in vocal music, for this constitutes an essential branch of their education. The music master of our academy has furnished me with an observation still more in favor of this opinion. He informed me that he had known several instances of persons, who were strongly disposed to consumption, who were restored to health by the exercise of their lungs in singing."

Art. V.—SORGHUM SACCHARATUM.

As much is now being said in relation to the introduction of this plant, for the increase of our forage, as well as for its saccharine properties, and as reliable information is what is sought, we have thought proper to copy the following from the Patent Office Report of 1855:

"This gramineous plant is of Chinese origin, but more recently from France, by the way of Natal, in South Africa. Since its introduction into this country, it has proved itself well adapted to our geographical range of Indian corn. It is of easy cultivation, being similar to that of maize, or broom corn; and if the seeds are planted in May, in the Middle States, or still earlier at the South, two crops of fodder can be grown in a season, from the same roots, irrespective of drought. The first one in June or July, to be cut before the panicles appear, which would be green or succulent like young Indian corn, and the other, a month or two later, when, or before, the seed is fully matured. The amount of fodder which it will produce to the acre, with ordinary cultivation, may be safely estimated at seven tuns, when green, or at least two tuns per acre, when thoroughly cured. The stalks, when nearly mature, are filled with a rich saccharine juice, which may be converted into sugar, syrup, alcohol, or beer; or may be used for dyeing wool or silk a permanent red or pink; and the entire plant is devoured with avidity, either in a green or dry state, by horses, cattle, sheep and swine.

Considered in a utilitarian point of view, this plant, perhaps, has stronger claims on the American Agriculturist, than any other product that has been brought to this country since the introduction of cotton or wheat. Aside from other economical uses, its value for feeding to animals, alone, in every section of the Union where it will thrive, can not be surpassed by any other crop, as a greater amount of nutritious fodder can not be obtained so cheap, on a given space, within so short a period of time.

When Cato was asked what was the best system of farming, he thrice answered, 'bene pascere;' which translated is, 'to graze well,' or to procure food for cattle—having had in view the connection between the feeding of stock and the production of manure. Admit-

ting this axiom to be true, what more economical, sure and feasible mode can be adopted, to restore and maintain the fertility of the exhausted lands of this country, than to extend the culture of this plant, for the rearing and support of a large number of cattle or other animals, and enriching these lands with their manure? Without wishing to present the question in an extravagant light, it may be stated that this crop is susceptible of being cultivated, within the territory of the United States, to an extent equal to that of Indian corn, say, twenty-five million acres per annum; and estimating the average yield of dry or cured fodder to the acre, at two tuns, the yearly amount produced would be fifty million tuns, which to keep within bounds, would be worth at least five hundred million dollars, besides the profits derived from the animals, in milk, flesh, labor and wool. In addition to this, it may be stated that it will resist the effects of considerable frost without injury, after the panicles appear, and that those who wish to save the seeds for planting, should not cultivate it in the vicinity of Dourah corn, Chocolate corn, nor Broom corn, as it hybridises or mixes freely with those plants, which would render the seeds of the product unfit for that use.

There has been considerable discussion in relation to the genuine seed. To satisfy ourselves on this point, we have written to Mr. D. J. BROWNE, at the head of the Agricultural Department of the Patent Office, as likewise to Mr. PETERS, Atlanta, Georgia, whose letters in reply we herewith publish for the benefit of our readers:

UNITED STATES PATENT OFFICE,
November 24th, 1856.

DEAR SIR:—

With respect to the 'Sorgho Sucre,' or Chinese Sugar-Cane, I would inform you that all seed distributed from this Office for the last two years, was imported from Messrs. VILMORIEW, ANDRIEUTH & Co., of Paris, and proved true to its kind. We have on hand some of the imported seed, also an abundance of seed cultivated in the District, directly under my eye, free from any influence by a mixture with other plants. This Office will take pleasure in furnishing your Institution with a sufficient quantity of either, for trial, with the history of the plant, and full directions for cultivation.

Yours, respectfully,

D. J. BROWNE.

ATLANTA, Georgia, Nov. 25th, 1856.

F. G. CARY, Esq:—

DEAR SIR:—You will find, inclosed, a sprig of the genuine 'Chinese Sugar-Millet,' taken from one of the stalks grown on my experimental acres.

This plant mixes readily with the 'Broom Corn,' and with Guinea Corn—the hybrid grows much taller than the genuine. In this climate I have not seen a stalk of the true 'Chinese Sugar-Millet' over nine feet in hight—the size of the cane is increased by rich soil, but not the hight—yet in your climate it may grow taller; for comparison, the growth of common corn, north and south.

The stalk of the true variety is *solid*, like the Sugar-Cane, not pithy and porous like Broom Corn, or Indian Corn; by a *look* or a *bite* any one can easily know the true from the spurious.

I know I have the true variety, and I intend next spring to plant one hundred acres, so well have I satisfied myself of its being a money-making plant. The bunches of the seed-heads '*sprangle*' out somewhat like Broom Corn; the seed-heads of the Guinea Corn grow upright, the seeds of the latter being smaller and more elongated. Another variety of the African, or Guinea Corn, turns down at the head, like a common walking-stick handle.

* * * * *

Yours, respectfully,

RICH'D PETERS.

This, among other valuable seeds, from the Patent Office, and other places, will be tested upon our experimental farm, and reported upon in due season. It is our purpose to keep on hand, for distribution, all kinds of seeds, the best varieties of wheat, corn, barley, oats, grass-seeds, etc., as soon as the Farm Department shall have had time to collect and fully test them; as likewise all the choice fruits, trees and shrubs. From present appearances, the Lectures in Polytechnic Hall will be numerously attended the present winter, and increasing interest will spring up as we proceed.

GUARD all descriptions of stock against cold and exposure, especially against cold storms of rain, sleet and damp snow, and against lying out on the cold ground in cold nights, in the spring and fall.

Art. VI.—A STORY FOR THE HOLIDAYS.

BY T. S. ARTHUR.

'Did n't he make you a present of anything, Lizzy?' asked Margaret Granger of her cousin, Lizzy Green.

'No, not even a strawberry cushion,' spoke up Lizzy's sister Jane, 'that he might have bought for a sixpence. I think he's a right down mean, selfish, stingy fellow, so I do; and if he does not keep Lizzy on bread and water when he gets her, my name's not Jane Green.'

'I would n't have him,' said Margaret, jesting, yet half in earnest. 'Let Christmas go by, and not make his sweetheart a present of the most trifling value! He must have a petty soul. Why, Harry Lee sent me the "Leaflets of Memory" and a pair of the sweetest flower-vases you ever saw, and he only comes to see me as a friend. And Cousin William made me a present of a copy of Mrs. Hall's sketches, the most interesting book I ever read. Besides, I received lots of things. Why my table is full of presents.'

'You have been quite fortunate,' said Lizzy, in a quiet voice; 'much more so than Jane and I, if to receive a great many Christmas presents is to be considered fortunate.'

'But do n't you think Edward might have sent you some token of good-will and affection in the holiday season, when every one is giving or receiving presents?' asked Margaret.

'Nothing of the kind was needed, Cousin Maggy, as an expression of his feelings toward me,' replied Lizzy. 'He knew I understood their true quality—and felt that any present would have been a useless formality.'

'You can't say the same in regard to Jane. He might have passed her the usual compliment of the season.'

'Certainly he might,' said Jane. 'Lizzy need n't try to excuse him after this lame fashion. Of course there is no cause for the omission but meanness—that's my opinion, and I speak it out boldly.'

'It is n't right to say that, sister,' remarked Lizzy. 'Edward has other reasons for omitting the prevalent custom at this season—and good reasons, I am well assured. As to the charge of meanness, I

do n't think the fact you alledge a sufficient ground for making it.'

'Well, I do, then,' said cousin Margaret. 'Why, if I were a young man and engaged to be married to a lady, I 'd sell my shoes but what I 'd give her something as a Christmas present.'

'Yes—or borrow or beg the money,' chimed in Jane.

'Every one must do as he or she thinks best,' replied Lizzy. 'As for me, I am content to receive no holiday gift, being well satisfied that meanness has nothing to do with it.'

But notwithstanding Lizzy said this, she could not help feeling a little disappointed; more perhaps on account of the appearance of the thing, than from any suspicion that meanness, as alledged by Jane, had anything to do with the omission.

'I wish Edward had made Lizzy some kind of a present,' said Mrs. Green to her husband, a day or two after the holidays had passed; 'if it had only been for the looks of the thing. Jane has been teasing her about it ever since, and calls it nothing but meanness in Edward—and I am afraid he is a little close.'

'Better that he should be so than too free,' replied Mr. Green; though I must confess that a dollar or two, or even ten dollars, spent at Christmas for his intended bride, could hardly have been set down to the score of prodigality. It does look a little mean, certainly.'

'He is doing very well.'

'He gets a salary of eight hundred dollars, and I suppose it does not cost him ever four or five hundred to live—at least it ought not to do so.'

'He has bought himself a snug little house I am told.'

'If he's done that, he's doing very well,' said Mr. Green; 'and I can forgive him for not spending his money in Christmas presents that are never of much use, to say the best you will of them. I 'd rather Edward would have a comfortable house to put his wife in, than see him loading her down with presents of one foolish thing or another.'

'True, but it would n't have hurt him to have given the girl something, if it had only been a book, a purse, or some such trifle.'

'For which trifle he would have been as strongly charged with meanness as he is now. Better let it go as it is. No doubt he has good reasons for his conduct.'

Thus Mr. Green and Lizzy defended Edward, while the mother and Jane scolded about his meanness to their heart's content.

Edward Mayfield, the lover of Lizzy Green, was a young man of

principle, prudent habits and really generous feelings, but his generosity did not consist in wasting his earnings in order that he might be thought liberal and open-hearted, but in doing real acts of kindness where he saw that kindness was needed. He had saved from his salary in the course of four or five years, enough to buy himself a very snug house, and had a few hundred dollars in the Savings' Bank, with which to furnish it when the time came for him to get married. This time was not very far off, when the Christmas, to which allusion has been made, came round. At this holiday season, Edward had intended making both Lizzy and her sister a holiday present, and he had been thinking for some weeks as to what it should be. Many articles, both useful and ornamental, were thought of, but none of them exactly pleased his fancy.

A day or two before Christmas, he sat thinking about the matter, when something or other gave a new turn to his reflections.

'They do n't really need anything,' he said to himself, 'and yet I propose to myself to spend twenty dollars in presents merely for appearance's sake. Is this right?'

'Right if you choose to do it,' he replied to himself.

'I am not sure of that,' he added, after a pause. And then he sat in quite a musing mood for some minutes.

'That 's better,' he at length said, rising up and walking about the floor. That would be money and good feelings spent to a better purpose.

'But they 'l expect something,' he argued with himself; the family will think so strange of it—perhaps I 'd better spend half the amount in elegant books for Lizzy and Jane, and let the other go in the way I propose.'

This suggestion, however, did not satisfy him.

'Better let it all go in the other direction,' he said after thinking awhile longer, 'it will do a real good. The time will come when I can explain the whole matter if necessary, and do away with any little false impression that may have been formed.'

To the conclusion at which Edward arrived, he remained firm. No present of any kind was made to his betrothed, or her sister, and the reader has seen in what light the omission was viewed.

Christmas eve proved to be one of unusual inclemency. The snow had been falling all day, driven into every nook and corner, cleft and cranny, by a piercing north-easter ; and now, although the wind had ceased to roar among the chimneys, and to whirl the snow with

blinding violence into the face of any one who ventured abroad, the broad flakes were falling slowly but more heavily than since the morning, though the ground was covered already to the depth of many inches. It was a night to make the poor feel sober, as they gathered more closely around their small fires, and thought of the few sticks of wood, or pecks of coal, that yet remained of their limited store.

On that dreary night, a small boy, who had been at work in a printing office all day, stood near the desk of his employer, waiting to receive his week's wages and go home to his mother, a poor widow, whose slender income scarcely sufficed to give food to her little household.

'You need n't come to-morrow John,' said the printer, as he handed the lad the two dollars that were due to him for the week's work, 'to-morrow is Christmas.'

The boy took the money, and after lingering a moment, turned away, and walked towards the door. He evidently expected something, and seemed disappointed. The printer noticed this, and at once comprehended its meaning.

'John,' he said kindly.

The boy stopped and turned round; as he did so the printer took up a half dollar from the desk, and holding it between his fingers, said:

'You've been a very good boy, John, and I think you deserve a Christmas gift. Here 's half a dollar for you.'

John's countenance was lit up in an instant—as he came back to get the money, the printer's eye rested upon his feet, which were not covered with a very comfortable pair of shoes, and he said:

'Which would you rather have, John—this half dollar, or a pair of new shoes?'

'I 'd have the new shoes, replied John, without hesitation.

'Very well; I'll write you an order on a shoemaker, and you can go and fit yourself,' and the printer turned to the desk and wrote the order.

As he handed to John the piece of paper on which the order was written, the lad looked earnestly into his face, and then said with strongly marked hesitation:—

'I think, sir, that my shoes will do very well if mended; they only want mending. Won't you please to write shoes for my mother instead of me?'

The boy's voice trembled, and his face was suffused. He felt that he had ventured too much. The printer looked at him for a moment or two, and then said:

'Does your mother want shoes badly?'

'Oh yes, sir. She does n't earn much by washing and ironing when she can do it; but she sprained her wrist three weeks ago, and has n't been able to do anything but work a little about the house since.'

'And are your wages all she has to live upon?'

'They are now.'

'You have a little sister, I believe?'

'Yes sir.'

'Does she want shoes also?'

'She has had nothing but old rags on her feet for a month.'

'Indeed!'

The printer turned to his desk, and sat and mused for half a minute while John stood with his heart beating so loud that he could hear its pulsations.

'Give me that order,' the man at length said to the boy, who handed the slip of paper. He tore it up, and then wrote a new order.

'Take this,' he said, presenting it to John. 'I have told the shoe-maker to give you a pair for your mother, yourself, and your little sister; and here is the half-dollar, my boy, you must have that also.'

John took the order and the money, and stood for a few moments looking into the printer's face, while his lips moved as if he were trying to speak; but no sound came therefrom. Then he turned away without uttering a word.

'John is very late to-night,' said the poor widow Elliott, as she got up and went to the door to look out in the hope of seeing her boy. Supper had been ready for at least an hour, but she did n't feel like eating anything until John came home. Little Netty had fallen asleep by the fire, and was now snugly covered up in bed. As Mrs. Elliott opened, the door, the cold air pressed in upon her, bearing its heavy burden of snow. She shivered like one in a sudden ague fit, and shutting the door quickly, murmured:

'My poor boy,—it's a dreadful night for him to be out and so thinly clad—wonder why he stays so late away!'

The mother had scarcely uttered these words, when the door was

thrown open, and John entered with a hasty step, bearing several small packages in his arms all covered with snow.

'There 's your Christmas gift, mother,' said he, in a delighted voice; and here is mine, and there is Netty's!' displaying at the same time three pairs of shoes, a paper of sugar, another of tea, and another of rice.

Mrs. Elliott looked bewildered.

'Where did all these things come from, John?' she asked in a trembling voice, for she was overcome with surprise and pleasure at this unexpected supply of articles so much needed.

John gave an artless relation of what passed between him and the printer for whom he worked, and added—

I knew the number you wore, and I thought I would guess at Netty's size. If they do n't fit, the man says he will change them; and I 'll go clear back to the store to-night but what she shall have her new shoes for Christmas. Won't she be glad? I wish she were awake.'

'And the tea, sugar and rice, you bought with the half dollar he gave you?' said the mother.

'Yes,' replied John; 'I bought the tea and sugar for you. They 're your Christmas gift from me. And the rice we 'll all have to-morrow. Won't you make us a rice pudding for our dinner?'

'You 're a good boy, John—a very good boy,' said the mother, much affected by the generous spirit her son displayed. 'But take off your wet shoes, my son—they are all wet, and dry your feet by the fire.'

'No, not till you put Netty's shoes on to see if they fit her,' replied John. 'If they do n't fit, I 'm going back to the store.

'Just the thing,' said she.

'Now try on yours,' urged John.

'They could n't fit me better,' said the mother, as she slipped on one of the shoes. 'Now take off your wet ones, and dry your feet before the fire, while I put the supper on the table.'

John, satisfied that all was right, did as his mother wished, while she got ready for the frugal repast. Both were too much excited to have very keen appetites. As they were about rising from the table, after finishing their meal, some one knocked at the door. John opened it and a gentleman came in, and said familiarly—

'How do you do, Mrs. Elliot?'

'Oh, how do you do Mr. Mayfield? Take a seat, and she handed her visitor a chair.

'How has your wrist got, Mrs. Elliott? Are you most ready to take my washing again?'

'It's better, I thank you, but not well enough for that; and I can't tell when it will be. A sprain is so long getting well.'

'How are you getting along?' asked Mr. Mayfield, 'Can you do any kind of work?'

'Nothing more than a little about the house.'

'Then you do n't earn anything at all?'

'No sir—nothing.'

'How do you manage to live, Mrs. Elliott?'

'We have to get along the best way we can on John's two dollars a week.'

'Two dollars a week! you can't live on two dollars a week, Mrs. Elliott, that is impossible.'

'It is all we have,' said the widow.

Mr. Mayfield asked a good many more questions; and showed a very kind interest in the poor widow's affairs. When he arose to go away, he said—

'I will-send you a few things to-night, Mrs. Elliot, as a Christmas present. This is the season when friends remember each other, and tokens of good will are passing in all directions. I think I can not do better than spend all I designed giving for this purpose, in making you a little more comfortable. So when the man comes with what I shall send you, you will know it is for you. Good-night, I will drop in to see you again before long.'

And ere Mrs. Elliott could express her thanks, Mr. Mayfield had retired.

No very long time had passed before the voice of a man speaking to his horse, was heard at the door. The vehicle had moved so noiselessly along the snow-covered street, that its approach had not been observed. The loud stroke of a whip-handle on the door caused the expectant widow and her son to start. John immediately opened it.

'Is this Mrs. Elliott's?' asked a carman who stood with his leather hat and rough coat all covered with snow.

'Yes sir,' replied John.

'Very well, I've got a Christmas present for her, I rather think; so open the door until I bring it in.'

John had been trying on his new shoes and got them laced up about his ankles just as the carman came. So out he bounded into

the snow, leaving the door to take care of itself, and was up into the car in a twinkling. It did not take long, with John's active assistance, to transfer the contents of the car to the widow's store-room, which had been for a long time wanting in almost everything.

'Good-night to you, madam,' said the carman, as he was retiring, 'and may to-morrow be the merriest Christmas you ever spent. It is n't every one who has a friend like yours.'

'No, and may God reward him,' said Mrs. Elliott fervently, as the man closed the door and left her alone with her children.

And now the timely present was more carefully examined. It consistedof many articles; first, and not the least welcome, was half a barrel of flour. Then there was a bag of corn meal, another of potatoes, with sugar, tea, rice, molasses, butter, etc., some warm stockings for the children, a cheap thick shawl for herself, and a pair of gum shoes—besides a good many little things that had all been selected with a strict regard to their use. A large chicken for a Christmas dinner, and some loaves of fresh Dutch cake for the children had not been forgotten. Added to all this, was a letter containing five dollars, in which the generous donor said that on the next day he would send her a small stove and half a tun of coal.

Edward Mayfield slept sweetly and soundly that night. On the next day, which was Christmas, he got a stove for Mrs. Elliott. It was a small, cheap and economical one, designed expressly for the poor. He sent it with half a tun of coal.

Three or four days after Christmas, Mrs. Green said to Lizzy and Jane as they sat sewing:

'I declare girls, we 've almost forgotten our washerwoman, poor Mrs. Elliott. It is some weeks since she sent us word that she had sprained her wrist, and could not do our washing until it got well. I think you had better go and see her this morning. I should not wonder if she stood in need of something. She has two children, and only one of them is old enough to earn anything—and even he can only bring home a very small sum. We have done wrong to forget Mrs. Elliott.'

'You go and see her Lizzy,' said Jane, 'I do n't care about visiting poor people in distress, it makes me feel bad.'

'To relieve their wants, Jane, ought to make you feel good,' said Mrs. Green.

'I know it ought, but I had rather not go.'

'Oh yes, Jane,' said Lizzy, 'you must go with me. I want you

to go. Poor Mrs. Elliott, who knows how much she may have suffered ?'

'Yes, Jane, go with Lizzy; I want you to go.'

Jane did not like to refuse positively, so she got ready and went, though with a good deal of reluctance. Like a great many others, she had no taste for scenes of distress. If she could relieve a want by putting her hand behind her without seeing the object of penury, she had no objection to doing so; but to look suffering in the face was too revolting to her sensitive feelings.

When Lizzy and Jane entered the humble home of the widow, they found everything comfortable, neat and clean. A small stove was upon the hearth, which, though the day was very cold, diffused a genial warmth throughout the room. Mrs. Elliott sat knitting; she appeared extremely glad to see the girls. Lizzy inquired how her wrist was, how she was getting along, and if she stood in need of anything. To the last question she replied:

'I should have wanted almost everything to make me comfortable, had not Mr. Mayfield, one of the gentlemen I washed for before I hurt my wrist, remembered me at Christmas. He sent me this nice little stove and a load of coal, a half barrel of flour, meal, potatoes, tea, sugar, and I can 't now tell you what all—besides a chicken for our Christmas dinner, and five dollars in money. I 'm sure he could n't have spent less than twenty dollars. Heaven knows I shall never forget him! He came on Christmas eve, and inquired so kindly how I was getting along; and then told me that he would send me a little present, instead of to those who did n't really need anything, and who might well forgive him for omitting the usual compliments of the season. Soon after he was gone, a man brought us a car-load of things, and on Christmas day the stove and the coal came.'

Jane looked at Lizzy, upon whose face was a warm glow, and in whose eyes was bright a light.

'Forgive me, sister, for my light words about Edward,' said Jane, the moment she and Lizzy left the widow's house. 'He is generous and noble hearted; I would rather he had done this, than made me a present of the most costly remembrancer he could find, for it stamps his character. Lizzy, you may well be proud of him.'

Lizzy did not trust herself to reply, for she could think of no words adequate to the expression of her feelings. When Jane told her father about the widow—Lizzy was modestly silent on the subject—Mr. Green said:

'That was nobly done! There is the ring of the genuine coin! I am proud of him!'

Tears came into Lizzy's eyes as she heard her father speak so warmly and approvingly of her lover.

'Next year,' added Mr. Green, 'we must take a lesson from Edward, and improve our system of holiday presents. How many hundreds and thousands of dollars are wasted in useless souvenirs and petty trifles, that might do a lasting good, if the stream of kind feelings were turned into a better channel.'

ART. VII.—THE MORAL INFLUENCES OF AGRICULTURE.

WHEN we reflect upon the vast number of our people who are, and must be, employed in agricultural pursuits, especially in the West, we can not be indifferent to the moral tendencies of the employment. If they are bad, it must be next to impossible to prevent the rapid degeneracy of the whole people; for all the other professions combined can not resist the influence of an immoral yeomanry. If they are good, we have very much to hope from them in respect to the future character of our beloved country. We think there can be no reasonable doubt that the last view of the subject is the true one; that all the appropriate influences of the farmer's life are eminently favorable to habits of virtue, and even of piety.

1. Agriculture is the first and most natural state of man—that to which, in his primitive state, he was first called, both by his own wants and by the special appointment of his Maker. Adam was placed in the garden 'to dress it and to keep it.' Now it is not for a moment to be supposed that God would have given to man in a state of innocence, an employment which should have the least tendency to lead him away from the path of rectitude. It is the only vocation to which God originally called his creature man; it must then be safe and wholesome in all its tendencies. The presumptions, then, are all in favor of our position.

2. *Labor* is indispensable to sound morality. 'By the sweat of thy brow shalt thou eat bread,' is not to be regarded primarily as a sentence of displeasure because of sin, but as an appointment of nec-

essary discipline for a fallen being. Nothing can keep down the fiery passions of the human heart, but severe and constant labor.—Luxury and idleness breed every form of depraved lust and crime.—The lazy, idle man will almost of necessity be vicious. If in want of the necessaries of life, he will steal rather than work. If he have an abundance, he will be a glutton, or a drunkard, or a licentious wretch; very likely all three together. The haunts of vice in every city, the records of every penitentiary, bear witness to these assertions. Men must labor, or they will be wicked. The necessity of labor for the supply of the means of supporting life, is then a merciful necessity, an unspeakable blessing. Without it, humanity would sink from one stage of degradation and defilement to another, till the whole race would 'utterly perish in their own corruption.'—Thorns and thistles, rugged rocks and barren hills, have much to do in preserving the human family from moral putrefaction.

3. Of all the kinds of labor, none is so favorable to moral culture as that of the farmer. One reason of this, is, that none can be more promotive of bodily health and vigor. Out in the pure air of heaven, in rain and sunshine, summer and winter, where the odors of mother earth, and the breath of opening flowers and springing grass are all about us, this is the place for health; and it will be found in the long run, that the employments which are the most healthy physically, are also the most healthy morally. The statistics of this subject would be found of exceeding interest, but we have not time nor space to present them.

Another reason why this kind of labor is so favorable to virtue, is, that much more than any other, it brings men into immediate contact with Nature, and the God of Nature. The farmer is not a builder, not a framer, as is the mechanic and the artizan of every name. He does not take material ready made to his hand and recast it, nor construct out of it instruments of art. He does not work *upon* the products of nature, so much as he works *with* nature in furnishing those products. He opens the earth and puts in the seed, and protects it from being overgrown with weeds and from being devoured by animals; but further he can not go. He can not cause the grain to swell, and burst forth, and send up the blade and the full corn. He may train the tree, if it grow, but he can not call forth, upon its branches, one particle of fruit. He is absolutely dependent upon God for any results of all his labor. He watches the clouds, the sun, the frost, the early and the latter rain; and he must

be indeed stupid and hard hearted, if he is not made better by this daily necessity of recognizing his dependence upon a higher power. But besides this, what life can be so calculated to fill the mind with gratitude and love to the Supreme Being as that which brings one daily into contact with His works. What is there of God in the shop, the bank, the office, the factory? But the fields, the forests, the streams, the hills and vallies, these, the home of the farmer, are all vocal with God's praise. The opening flower, the waving grain, the luscious fruit, 'the harvest home,' the music of birds, the bleating of flocks, the storm and the sunshine, all speak to him of his Maker, and teach him to adore and reverence and love.

4. But we need not theorize on the subject. We have facts enough on record to sustain our position. Very few of the sturdy, hard-working yeomanry of the land, will be found among the tenants of our jails and prisons. The cities and large towns furnish the occupants of these. The schools of vice at which the miserable beings have graduated, who are here shut up for safe keeping, are the grog-shops, the gambling-houses, the theaters of the city; not the quiet fireside of the industrious farmer.

The world never saw a more moral people than those, who, for two hundred years have digged and ploughed the rugged hills of New England. As they have gone forth thence over the richer lands of the West, they have borne with them everywhere their schools and their churches. They have been everywhere the firm defenders of good laws and good order and good institutions. They, and others, who, like them have been trained in the school of Agriculture, in this and in other lands, constitute the bone and muscle of the community. They are not the 'fillibusters,' nor the 'border ruffians,' but the quiet, orderly and reliable defenders of all that is good and right. The cities may become corrupt, the strong holds of every vice; but the staid, sober, thoughtful, intelligent yeomanry will prove, as they always have done, the conservators of all our cherished institutions and our most ardent hopes.

With such views, we regard with intense interest all that is done to educate the farming population. They are in our esteem the hope of our country. Let virtue and intelligence characterize the farmers of the land, and the country is safe.

ART. VIII.—THE ÆOLIAN HARP.

ALL our readers have heard of the Æolian Harp—the Harp of the Winds? They have read about it in the poets, who have celebrated its virtues in their choicest strains, as for example, in such as follow by Montgomery:

Thus o'er the light Æolian Lyre,
  The winds of dark November stray,
Touch the quick nerve of every wire,
  And on its magic pulses play,

Till all the air around
  Mysterious murmurs fill,
A strange, bewildering dream of sound,
  Most heavenly, sweet, yet mournful still.

And yet comparatively few have heard the harp itself. To most persons it exists only as a fancy, if indeed it exist at all, classified with syrens and mermaids. Flutes, pianos, and organs, are realities, *facts*, everywhere discoursing sounds, artificial, prosaic—as destitute of the spirituality of music, as is the jingle of coin. But the mysterious harp of the winds—what is it? Is it a mere creation of the poet, as vain as the existence of old Æolus himself? Sometimes when the damp south wind blows, we hear just outside the window or door of our cottage, where old and young are gathered after nightfall, a mournful strain of soft, sweet music, now murmuring low, now wailing loud, now lulling into silence. Was that the harp of Æolus? Not quite. It was his heavy, damp breath—fore-runner of storms—pouring through a crevice in the wainscoat, or perhaps a key-hole, thus strangely made a *lute*. It might then, have been his lute, or perchance his *voice*, but certainly not his *harp*.

It is our good fortune to possess a genuine 'harp of the winds,' and its warbling notes, rich, plaintive and indescribably sweet, even now inspire our meditations while we write. If there be in the bosom of the reader an answering chord to nature's melodies, such as there seems to be in our own, while listening to these strains of more than earthly music, he will read patiently the account we give of the construction of this simple instrument, and our attempt at the explanation of its phenomena.

A box is constructed of spruce or hemlock boards, (the latter is

the better because more *elastic,*) of the utmost lightness consistent with strength. Its dimensions are three feet in length, seven inches in breadth, and two inches in depth. The length, however, should not exceed the width of the window in which it is to be placed, and if on this account, the length be less than three feet, the other dimensions should also be lessened in the same proportion. But it should be borne in mind that any diminution from the size above named, will also be an equal diminution in the richness and fullness of the tone. A length of five feet with a window broad enough to accommodate it, would be better still. The two boards for the upper and under sides, may be reduced to the thickness of one-eighth of an inch; the two lateral, about one-fourth of an inch. The two ends must be of black walnut, (or some other wood equally firm,) and one-half of an inch in thickness. The whole should be put together firmly with glue. In the upper or sounding board, are two apertures, ornamentally designed.

The chords, nine in number, may be each composed of from five to eight threads of 'saddlers'' silk, smoothly twisted, and stretched lengthwise over the sounding-board. To secure these chords in their places, nine small brass screws or brads are fixed in one of the walnut end-pieces, and the same number of *nuts* similar to those of a violin, are made to turn in perforations in the other end-piece; two bridges, also, of beech, support the chords near the ends of the instrument. Stain and lac-varnish according to your taste.

In *tuning* the harp, first raise the heaviest chord to a degree of tension as great as it may easily bear, and then bring the others to the *same tone*; for all the chords must be retained in perfect *unison.* Then raise the window-sash slightly—just enough to admit the instrument under it, on the windward side of the house, and invoke the inspiring breeze.

It might be supposed that an instrument so tuned, would give only a continual monotonous sound—the key-note of the harp; not so. It pours forth strains of voluntary symphonies, endless in variety, running through all possible combinations of melody and harmony—now murmuring low with a distant moan—now swelling the chorus clear and full—and now—Oh what shrieks of rapturous harmonies, like angels' wail over a fallen world! This variety of tones from strings all tuned to a single note is surprising, and its explanation goes far in revealing the laws of musical sounds, in general. This explanation is as follows:

The sounds are produced by the *vibrations* of the string ; the variations of tone are caused by changes in the frequency of these vibrations, together with changes in the *length* of the vibrations, or *waves*. Fix your eye upon a chord which is sounding its lowest or key-note, and you will perceive that its entire length is in motion—i. e., its wave length is equal to the string's length. The note thus produced, we may call $\underline{\underline{C}}$. This note, however, is very seldom produced by the wind, but the lowest note sounded is an *octave* above this, viz : $\underline{C}$, and is produced by the vibration of the chord in two equal portions, while the central point of it remains quiet, i. e., becomes a *node*. If now the breeze freshens, somewhat, a higher note is heard—a *fifth* above, which is G. In this case the chord vibrates in three equal portions, with *two* nodes. A stronger breeze gives us the third C, a *fourth* above, which is caused by *three* nodes, dividing the string into four equal waves. A still stronger breeze, a wind arises, and the new note evoked from the trembling string is E, a *major third* above, caused by *four* nodes dividing the string into five equal waves. A swifter wind—a gale—lifts the tone a *minor* third, to G, by means of *five* nodes with six waves. A stronger gale breaks the wave into seven equal parts with *six* nodes, giving us another minor third, viz., A♯. (sharp.) The next note which is never heard except the strings be swept by a tempest, is the fourth octave C, produced by *seven* nodes with eight equal waves.

Thus each string is capable of yielding seven or eight notes, depending upon the force of the wind. Another note still higher is possible in a wind of extreme violence, which note would be a single tone above, viz., D, with eight notes and nine waves. The entire scale of the Æolian harp is therefore as follows :

$\underline{\underline{C}}$, $\underline{C}$, G, C, E, G, A♯, C, D.

The number of nodes for each of these notes is :

0, 1, 2, 3, 4, 5, 6, 7, 8.

The number of wave-lengths for each is:

1, 2, 3, 4, 5, 6, 7, 8, 9.

The lengths of the waves compared with the whole string are ;

$1, \frac{1}{2}, \frac{1}{3}, \frac{1}{4}, \frac{1}{5}, \frac{1}{6}, \frac{1}{7}, \frac{1}{8}, \frac{1}{9};$

and since the number of vibrations per second is inversely as the *length* of the wave, this will be proportionately as

1, 2, 3, 4, 5, 6, 7, 8, 9 ;

that is, if our string be tuned to C, there will be vibrations per second for each note,

64, 128, 192, 256, 320, 384, 448, 512, 576; which series of numbers is entirely consistent with the received theory of musical sounds, and therefore the Æolian harp is both a proof and illustration of the correctness of this theory.

Again, we notice that the eight or nine notes which compose the Æolian scale are all harmonious with each other, and embrace all those intervals which, in the language of music, are called *chords*. Therefore, every combination of sound of which the instrument well-tuned is capable, must be *harmony*, and only harmony—a scientific fact to which the ear of the enraptured listener bears witness. Nor is the number of combinations small in a harp of nine strings, each one of which is susceptible of nine distinct notes. According to the rules of 'permutations and combinations,' these are in effect infinite; and thus the 'breezy fingers' of the wind are made to strike a 'harp of a *thousand* strings,' in a most literal sense.

From what has been said, it becomes evident that our young friends may summon the summer winds to make harmony for their senses in Æolian strains that human performers can never rival. By the simple contrivance above indicated they may construct for themselves an instrument equally adapted to the lordly mansion, and the humblest cottage; an instrument capable of the most scientific accuracy of intonation, and which, when 'lightly stirred by fairy fingers,' will give forth harmonious utterances that will stir the sweetest and deepest emotions of which the human soul is susceptible. At one moment the rushing breeze sweeps the chords with bold and boisterous hand, and all the heroism of our souls is roused and ready to dare and do; anon, the sighing zephyr comes moaning through the harp in tones so deeply plaintive as 'might wake oblivious wonder in the ear of death.'

"Now the music mounts on high,
Sweetly swelling through the sky,
Now the strains to silence stealing,
Soft in ecstacies expire."

In a dry time, see that animals have a good supply of pure water. when the fountains are low, they drink the drainings of fountains, streams and passages of water, which are unwholesome.

If barns and stables are very tight and warm, ventilate in mild weather, even in winter.

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ART. IX.—*The Musci and Hepaticæ of the United States, East of the Mississippi River.* *By* W. S. SULLIVANT *New York: G. P. Putnam.* 1856.

IN a new country, the Flowering Plants, (*Phaenogamia*) are the first in the vegetable kingdom to receive the attention of Naturalists, as well as the admiration of all. Their superior magnitude is most obvious to the senses which their superior beauty first attracts. Consequently, we have botanical works, on the flowering plants, in great numbers, among the earliest of our scientific publications. But at length, after every one has studied these plants, and new species are no longer to be expected to reward the research of the ambitious student, attention is turned towards objects more minute and more novel — the humble Cryptogamia. To this point in our own literary history we are fast arriving, and the work announced at the head of this article is the worthy herald of this new class of botanical works. We say *new*, in respect to America; similar works have long since been common in Great Britain, France and Germany, describing the Cryptogamic plants with wonderful exactness and fullness.

The author of this work—W. S. Sullivant, of Columbus, O.—has already gained a world-wide fame as a muscologist by his numerous contributions to this comparatively new department of American science. The difficulties to be encountered in such investigations are such as all pioneers in science experience, and none except such can appreciate. Every step of progress is to be tested by the microscope and established by the consent of all previous authority.—With untiring patience and eminent sagacity our author has long pursued his investigations in this neglected field of microscopic beauties, until at length he gives us this volume, so ardently desired, in which nearly five hundred species of our Mosses and Liverworts are authentically described, and more than one hundred — one of each genus — are minutely illustrated! As to the accuracy of the delineations and descriptions, few of us are competent to judge, at present; but many we think will be, speedily, having such an alluring guide in the study of these interesting objects of natural history.

But what are the Musci, and Hepaticæ? — their office, nature, uses? On these points we shall venture a few statements in some future number.

Art. X.—CHEMICAL TRANSFORMATIONS.

The alchemists of yore believed that a substance could be found whose touch could transmute all the baser metals into gold; or, by purifying them of their dross, would leave gold the *basis* of all the metals, pure and unalloyed. They toiled long and ardently in their search after the 'Philosophers' stone,' and many a fine manly form was prematurely bent, and paled in the dim garret, or dungeon-like laboratory, peering into the furnace and inhaling the noxious fumes of the seething retort or glowing crucible, until exhausted means or stern death, put an end to the chimerical pursuit.

These martyrs to a false faith, however, labored not wholly in vain, for they laid the foundation of that noble science which underlies all other natural sciences, and which has been the means, in the latter days, of more than realizing the fondest dreams of the alchemist; although it must be admitted, in a manner quite different from that he anticipated. We still must dig the yellow metal from the bowels of the earth, but by the aid of chemistry we effect transformations as wonderful, and far more useful, than to turn all things to gold—hard, yellow gold—which can neither be eaten, nor drunken, nor worn for clothing. It rather teaches us to transform the very stones, dirt and offal of the street, into the most useful and valuable substances, which minister directly to our comfort and happiness.

So great has been the saving influence of chemistry in the arts of life, that Dr. Playfair says, 'she is like the prudent housewife which economizes every scrap.' The horse-shoe nails, dropped in the street during the daily traffic, are carefully collected by her, and re-appear in the form of swords and guns. The clippings of the traveling tinker, are mixed with the parings of horses hoofs from the smithy, or the cast-off woolen garments of the poorest inhabitant, and soon afterwards, in the form of dyes of the brightest blue, grace the dress of courtly dames. The main ingredient of the ink with which I now write, was possibly once part of the broken hoop of an old beer barrel. The bones of dead animals yield the chief constituent of lucifer matches. The dregs of port-wine, carefully rejected by the drinkers in decanting his favorite beverage, are tak-

en by him in the morning, in the form of Seidlitz powders, to remove the effects of his debauch. The offal of the streets, and the washings of coal-gas, re-appear carefully preserved in the lady's smelling-bottle, or are used by her to flavor blanc-manges for her friends. This economy of the chemistry of Art, is only in imitation of what we observe in the chemistry of Nature. Animals live to die; then their dead bodies passing into putridity, escape into the atmosphere, whence plants again mold them into forms of organic life; and these plants, actually consisting of a past generation of ancestors, form our present food.

The chemist has so far triumphed in the inorganic world, that he is expected to reproduce almost every mineral compound which may be submitted to him. A remarkable instance of the power of chemistry in this respect, is shown in the production of the most beautiful and permanent blue which the artist uses. But a few years since Lapis-lazuli could not be purchased but at the enormous price of twice or thrice its weight in gold. It was carefully analyzed by modern science, and shown to be made of common earths, which are every day trod under foot. Chemistry showed the manufacturer how these vile earths could be brought together, and blend into that invaluable pigment, 'so deeply, brightly, beautifully blue;' and now Ultras-marine, equal in every respect to the best native Lapis-lazuli, can be purchased for one dollar a pound.

But it is among organic products, that we are to look for the strangest transformations. We are forcibly reminded of them, on visiting the laboratory of Dr. GRASSELLI, in the 'Queen city.' We saw the black Cannel coal, under the patent influence of heat, transformed into a pure, watery looking liquid, called benzole, and into wax, when purified, as white as snow; and into lubricating oil, as unctuous as the finest sperm.

Coal is a product of vegetable origin. In the world's younger days, immense forest growths accumulated in places where the waters of the sea or rivers soon covered them with mud, and there, as time rolled on, the vegetable matters were changed into various products, the chief of which are stone coal—more or less resembling anthracite, according to the time it has been in the ground—naptha, bitumen, burning gas, and various other products. By the destructive distillation of wood, these products can be imitated, and thus, by causing heat to put forth its strange power, we obtain productions which require in nature's laboratory, the lapse of ages to form. When these

products are again treated with heat, or electricity, or the presence of other bodies, an endless succession of new compounds, astonishes the experimenter himself; for the greatest cause of wonder, is, that all these products, so different in their nature and general properties, are all composed of but two or three elements; the same that we find in charcoal and water—sugar, has nothing else in it; neither has alcohol, nor the fats, oils, wax and an almost endless variety of substances. Heat converts starch into gum; sulphuric acid changes it into sugar, and it is possible, that some day, we shall discover the art of so mixing the carbon and water, that the coal heap and the pump shall furnish us all the sweets we need.

But, so far, nothing but the vital power has been able to take the initiatory steps in these changes. We can make sugar from starch, but we can not form the starch, although we well know the elements of which it is composed. The crude mineral element must be first breathed upon by the breath of life, ere it yields to the devices of man, and enters into such new compounds, as he may desire. How curiously this vital power goes to work! Look at several plants growing side by side, upon the same kind of soil, and watered by the same showers. Yet from these self-same materials, one manufactures, in its hidden laboratory, opium; another, sugar; another, prussic acid; another, turpentine; another, starch; still another, a fragrant essence; and another, a nauseous, sickening oil; and although we watch the process with all the aids of the greatest magnifying powers, we can not learn how it is done, but we can take these products when formed, and obtain secondary ones by thousands.

In the manufacture of perfumes and essences, some almost incredible transformations, occur. Two distinguished chemists, Dr. Hoffman and Mr. De La Rue, on one of the juries of the great London Exhibition, ascertained that some of the most delicate perfumes, were made by chemical artifice, and not, as of old, by distilling them from flowers. The perfume of flowers often consists of oils and ethers, which the chemist can compound artificially in his laboratory. Commercial enterprise availed itself of this fact to send to their exhibition in the form of essences, perfumes thus prepared. Singularly enough, they are generally derived from substances of an intensely disgusting odor. A peculiarly fœtid oil, named 'fusel oil,' is formed in making brandy and whisky. This fusel oil, distilled with sulphuric acid, and acetate of potash, gives the oil of pears. The oil of apples, is made from the same fusel oil, by distillation

with sulphuric acid and bicromate of potash. The oil of pine-apples is obtained from the action of putrid cheese on sugar, or by making a soap with butter, and distilling it with alcohol and sulphuric acid. It is now largely employed in England, in the preparation of pine-apple ale. Oil of grapes, and oil of cognac, used to impart the flavor of French cognac to British brandy, are little else than fusel oil. The artificial oil of bitter almonds, now so largely employed in perfuming soap and flavoring confectionary, is prepared by the action of nitric acid on the fœtid oils of gas-tar. Many a fair forehead is damped with *eu-de-mille-fleurs*, without knowing (*we write this in a modest whisper*,) that its essential ingredient is derived from the drainage of cow-houses!

Formerly, European confectioners depended on this country for the oil of winter-green, as the plant producing it grows abundantly in some of our northern States. Its high price, however, led the chemists to experiment upon this subject, and they now prepare it artificially in abundance.

When we reflect upon these strange metamorphoses, and many others that might be named, we are compelled to admit that the alchemists of old were not such utterly wild dreamers, after all.

SMALL POTATOES.—The London *Gardener's Chronicle* says, the use of small potatoes for planting can only be recommended in cases where large ones can not be obtained. To plant an acre with large sizes 4 oz. each, requires 21½ bushels at 56 lbs. To plant with sizes 2 oz. each, at the same distances, requires 14¾ bushels; and to plant with sets of common sizes in use, about one oz. each, at half the distance, takes about 10 bushels. Experience teaches us that large sets produce the most lucrative crops, and ripen their tubers sooner, causing a freer and earlier growth, both before and after they appear above ground.

OLYMPIAS, the mother of Alexander, was of so very unhappy and morose a disposition, that he could not employ her in any of the affairs of government. She, however, narrowly inspected the conduct of others, and made many complaints to her son, which he always bore with patience. Antipater, Alexander's deputy in Europe, once wrote a long letter to him, complaining of her conduct, to whom Alexander returned this answer: 'knowest thou not that one tear of my mother's will blot out a thousand such letters?'

Art. XI.—CHINESE SUGAR CANE—MORE FACTS.

In view of the great and growing interest in behalf of the Chinese Sugar Cane we publish the following taken from an Illinois paper, in addition to what we have already said on this subject:

The statement, as will be seen, gives the experiment of Mr. Grom- of Illinois, touching the sugar-producing qualities of this plant. Mr. Grom says:

On the 25th of May I planted about half an acre of ground, one year old. A portion of the soil was low and wet in the spring; in fact I covered the seed with mud, the other part was high and sandy; the consequence was when dry weather set in, the wet part baked hard, and the high burnt up for want of rain. I plowed it when about ten inches high, and that was all the working it got, with the exception of a slight hoeing previous to plowing; my object was to ascertain the amount of saccharine matter contained in the stalks, and supposed enough would grow to make the experiment. Many of the stalks grew from sixteen to twenty feet high, (in the low ground it only grew twelve feet.) Having made a mill in which to grind it, I commenced on the 24th of September. The cane then received two or three frosts, which slightly injured the taste of the water. I am convinced that the amount of stalks I used, can be grown in less than a quarter of an acre. The amount of water obtained from the piece was two hundred and seventy gallons, from which I made forty-five gallons of molasses, *which in flavor and beautiful bright red color, is far superior to any obtained from the South.* I did not try to grain any of it, as it will not grain after being frosted; but I am convinced there will be no difficulty in graining it if tried previous to the frost. If it is planted by the middle of May, it will ripen by the end of August, and remain in good condition until frost, and if cut up and put in sheds (in apprehension of frost) it will keep well for a month or more.

I will give a statement of what may be made ℔ acre, judging from the amount of water obtained from each stalk. One of my neighbors, Mr. A. Degan, obtained from seven choice stalks, one gallon of water, and another trial made by Mr. McCleary, Sr., and myself, pressed from ten stalks one gallon and a quart. The number of stalks in a hill should be from four to six. In my

calculations, I only estimate one quart of water to the hill, allowing sixteen hills ℔ square rod, which will make 2,560 hills to the acre, and this, at one quart ℔ hill, will make 640 gallons of water, which will make 110 gallons of molasses. Valued at 75c. ℔ gallon, it would amount to $82,50 ℔ acre, and I do not hesitate in saying that the amounts may be doubled. I would urge upon the farmers of the Western country to try it. You will not only save, but make money by the operation. I am well convinced that in 1860 the Southern planter will have no sale for his sugar in the State of Illinois. From present indications there will be 100 acres raised in Wabash county next year, which will save the county $10,000. The time to commence working the cane is when the seeds have changed from green to a dark red hue, although it will remain good until fairly matured.

Should any person wish to make the experiment, I have some seed to spare—one quart will plant an acre. J. M. GROM.

McCleary's Bluff, Wabash County, Ill.

ART. XII.—MANUFACTURE OF MALLEABLE IRON WITHOUT FUEL.

AT the meeting of the British Association for the Advancement of Science, held in Chěltenham, England, last month, BESSEMER, of London, read a paper on a new method of making malleable iron from pig iron, which deserves the attention of our iron manufacturers, as the process is very original, is stated to be perfectly successful, and destined to revolutionize the processes of manufacturing malleable iron and steel.

The following is the substance of his paper:

"For the last two years his attention had been almost exclusively devoted to the manufacture of malleable iron and steel, with but little progress, until within the last nine months. The idea occurred to him that if molten pig iron at a glowing heat was run into a chamber, and a blast driven through it, that the five per cent. of carbon in it would unite with the oxygen of the blast, producing intense combustion, because carbon can not exist at a white heat in contact

with oxygen. He therefore put up an apparatus capable of converting about seven cwt. of crude pig into malleable iron, and so successful was the result, that crude pig iron was rendered into malleable iron in half an hour.

He then put up a cylindrical vessel three feet in diameter and five feet high, like an ordinary cupola furnace, the interior of which he lined with fire brick. At about two inches from the bottom are inserted five tuyre pipes, having nozzles of fire clay. At one side of this vessel, half way up, is a tap-hole for running in the crude molten pig iron from a common blast furnace, and on the opposite side is another tap-hole, to run out the metal when the process is completed. A blast of air of a pressure of eight pounds to the square inch is let into this cylinder a few minutes before the crude iron is allowed to flow into it from the blast furnace. The molten crude iron is then let in by its tap, and it soon begins to boil and toss about with great violence. Flames and bright sparks then begin to issue from the vessel's top; the oxygen of the air from the blower combines with the carbon in the metal, evolving a most intense heat producing carbonic acid gas, which escapes; the metal is deprived of its carbon without roasting by fuel, as by the common mode, and thus it is rendered into malleable iron.

By this simple process the heat generated is said to be so intense that all slag is thrown out in large foaming masses, and all the sulphur is driven off, together with the deteriorating earthy bases, so that the metal is completely refined—more pure than any puddled iron. It is also stated that one workman by this process can convert five tuns of crude pig into malleable iron in about thirty minutes. Its advantages are painted in such dazzling colors, that we are afraid to rely on them implicitly. If they are such as Mr. BESSEMER has described, a new era in the iron manufacture has dawned upon the world, and malleable iron will soon be reduced to a price but little above common pig iron.

We hail every improvement in the manufacture of iron, either to cheapen its price or improve its quality, as of vast consequence to mankind, because it is the principal material employed in the mechanic arts; it is the great material of modern progress in physical science. Without it, we should neither have steam engines, steamships, railroads, cotton or woolen factories; we should be as deficient in machinery as our forefathers who lived in the age of bronze.

An immense amount of fuel is employed in the common process

of rendering pig iron malleable. It is roasted in a furnace by fire heat for a very long period, until its carbon is made to unite with the oxygen, to which it is exposed to form carbonic acid, which is driven off. The new process accomplishes the same result without the use of fuel—the carbon in the metal being made the agent to decarbonize itself.

The heat produced by this process is also stated to be so great, that scrap iron placed in a small chamber near its top is smelted.—By this process, steel of different qualities, it is also stated, can be produced by tapping the metal, at different stages of the process, after it boils in the cylinder.—*Scientific American.*

Art. XIII.—FROST AS A MANURE.

We know of no treatment so directly beneficial for almost every class of soils, as that of throwing up land in narrow ridges, in the fall or early winter. There are few soils worth cultivating at all, that do not contain more or less materials which can be made available to plants by the combined action of air and frost.

Take two plots of heavy soil side by side, and let one lie unmoved till spring, while the other is *deeply* plowed in autumn, and the result will be very visible in the spring crop. But the manner of plowing is important. To secure the greatest possible advantage, a single furrow should be thrown up, and another back furrow directly upon it, so as to produce a high ridge; and another ridge is to be made in the same manner, with a deep dead-furrow between the two. The process is to be continued thus through the field, so that, when finished, it will present a surface of high ridges and deep dead furrows, succeeding each other, about one in two, or two and a half feet. If prepared in this way, the frost will penetrate far downward, loosening and disintegrating the soil below the furrows, while the ridges will crumble down as they will not hold water, the air will circulate freely though them, decomposing the mineral portions, and conveying the ammonia and other gases. This operation will be equal to ten or more loads of good manure upon clay or compact soils.

In the spring, it will only be necessary to run a plow once or twice through the center of each ridge, and then level the whole down with a heavy harrow.

Another advantage in this process is, that when land is thus prepared, it dries out and warms several days earlier in the spring. Again, there are some soils that are exhausted upon the surface, but which contain poisonous substances in the subsoil. If this subsoil is thrown up in contact with air and frost during winter, these poisonous compounds—usually prote-sulphate of iron or manganese—will be destroyed, or changed to a harmless form, during the winter.

The above practice is especially to be recommended in the garden. One of the most successful cultivators of an acre of ground in our acquaintance, digs it up in the fall to the depth of three or four feet, making deep trenches and high ridges, so that the whole acre appears to be covered with high winrows of hay placed closely together.

We strongly urge every farmer who has not tried this method, to lay out their plans now for experiment in this way, on a larger or smaller scale, during the present season.

Art. XIV.—SUGAR.

The following statistics in regard to this article, which now commands an exhorbitant price, will be read with interest. We copy from the *Traveler*. It will be seen that there is no scarcity of sugar in the great markets of Europe and America, but, on the contrary, the supply is unusually large.—*West. Chris. Advocate.*

This old luxury, but now an article of almost prime necessity, droops in price under the accumulation which a diminished consumption, produced by high prices, has caused.

The stock at New York is larger than was ever before known, and is very large in all the ports of the United States. In New York it is set down at 73,833 hhds. and 19,231 boxes, against 26,469 hhds. and 27,280 boxes last year; in Boston, 7,301 hhds. and 14,412 boxes against 692 hhds. and 6,325 boxes last year; in Philadelphia, 8,387 hhds. and 2,242 boxes, against 4,802 hhds. and 2,450 boxes last year; in Baltimore, 5,534 hhds. and 2,582 boxes, against 3,255 hhds. and 2,817 boxes last year.

In Europe, including Great Britain, which is the great depot of supply for the continent, the stock is not only larger, but the imports of the year thus far have been greater than last year, and the business is limited, with a dull market.

The imports into Great Britain, up to the middle of August, this year, were 584,400,000 lbs. against 462,400,000 lbs. last year; and the imports into the chief ports of the continent of Europe are 442,000,000 lbs. against 454,000,000 lbs. last year. The stock on hand in Great Britain is 238,200,000 lbs. against 164,200,000 lbs. at the same time last year; and the stocks at the chief ports of Europe 48,100,000 lbs. against 75,700,000 lbs. last year. It will be seen that England has in store nearly three times the overplus necessary to make up the deficiency on the continent.

The United States is a great Sugar market, and a correspondent at Salem, who is well versed in the statistics of commerce, sends us the following statement of brown sugar entered the United States in two years; namely, in 1853, 456,510,627 lbs., costing $14,639,776, on which the duties were $4,391,929; in 1854, the imports into the United States were 449,520,309 lbs., costing $13,406,996, the duties on which were $4,622,092.

Now, in 1856, the sugar costs double, and the duties under the *ad valorem* rate are double also. Government does not want the money, and certainly when the Louisiana sugar crop is so almost entirely cut off that the planters have none to sell, we ought not to be subjected to double duties, but are rather entitled to have it on the free list.

Molasses now pays nine cents a gallon duty, under the *ad valorem* tariff, instead of five cents, as under the specific duty of 1842.

Art. XV.—VALUE OF CARROTS.

Carrots are very excellent *fodder* for horses that have been kept long on highly carbonaceous food, and whose digestive organs may be out of order in consequence of their constant activity in reducing meal and oats into the elements of animal nutrition. With a fair allowance of carrots, ground oats, and sweet hay, a horse will enjoy good health and spirits, have a loose hide, shining coat and healthy lungs. A daily allowance of carrots should always be furnished to horses subject to indigestion, and whose food often runs into fermentation, inducing diarrhœa, or a lax, washy state of the bowels. Carrots furnish an acid called *pectic*, which possesses the curious

property of gelatinizing the watery contents of the digestive cavities. A few drops of this pectic acid will gelatinize both, and, when mixed with the juice of an orange, changes the same into jelly. So that, if the alvine discharges of a horse are watery, carrots can be used as a valuable therapeutic agent, both in view of arresting the same and restoring the tone of the stomach and bowels. By examining the excrement of a horse fed in part on carrots, it will be found to contain no undigested hay or oats, and therefore we may safely infer that they promote digestion; so that, by the constant use of carrots, less quantities of hay and oats will suffice than when a larger amount is consumed, and parted with in an undigested state. For fattening animals, carrots are exceedingly valuable. It will be urged that carrots are not very nutritious. That may be; still, if they possess the property of gelatinizing the contents of the stomach and bowels, they aid in the manufacture of fat out of other food, which might otherwise pass out of the system.

It is said that the milk of a cow at mid-winter, fed on carrots, is equal in flavor to that supplied from clover in summer, while the butter made from such milk presents a rich orange color, and does not taste, as some persons suppose, of the peculiar flavor of this vegetable. Two bushels of oats and one of carrots is better food for a horse than three bushels of oats without carrots; and when the animal is used for light work only, the quantity of carrots may be increased.

The reader must bear in mind, however, that animals, like ourselves have their peculiar idiosyncracies or susceptibilities—'what is one man's food is another's poison'—and some might digest and thrive amazingly on a given article of food, while an equal number shall lose both flesh and spirits. There appears, however, to be less objection to the judicious use of carrots than many other vegetables, both as regards horses and cattle. If any of our readers happen to have what we term a '*stall-fed* horse, and the same shall be subject to the heaves'—sometimes a symptom of indigestion only—let them take away fine meal and substitute carrots, and, our word for it, the horse will improve.

METEOROLOGICAL TABLE.

Observations made at Farmers' College, College Hill, Hamilton County, Ohio, Latitude 39° 19′, *W. Lon.* 7° 24′ 45″ *for the month of November,* 1856, *by Prof. R. S. Bosworth. Hight of Station above the Sea,* 800 *feet.*

	Barometer, corrected for temperature & capillarity.				Open air thermometer.				Clouds—course & velocity.						Wind—direction & force.			Rain & melted snow.		
	7 A. M	2 P. M	9 P. M	Mean.	7 A. M	2 P. M	9 P. M	Mean.	7 A. M.		2 P. M.		9 P. M.		7. A. M.	2 P. M.	9 P. M.	Hour Began.	Hour Ended.	Am't Inch.
1	28.970	28.755	28.815	28.847	45.5	68.0	59.0	57.5	2	Cirrus	0	0	0	0	S. W. 6	S. W. 5	S. W. 3			
2	28.910	28.940	28.985	28.945	55.0	71.0	60.0	62.0	8	S.W. 8	4		3	Smoke	S. W. 3	S. W. 5	S. 3			
3	28.930	28.887	28.885	28.900	60.0	65.0	61.5	62.2	10	S. 8	10	S.W10	10	S.W. 5	S. 3	S. 2	S. 1	6½ A.M.	8 A. M.	0.325
4	28.755	28.955	29.155	28.955	51.0	42.0	35.0	42.7	10	W. 10	10	W. 8	10	N.W.5	W. 4	W. 5	N. W. 4	last night	last night	0.123
5	29.356	29.465	29.460	29.427	31.0	37.0	27.6	31.9	4	W. 3	4	N.W.3	0	0	W. 1	N. W. 1	0			
6	29.431	29.275	29.225	29.310	25.0	47.0	43.0	38.3	1	0	3	0	3	0	E. 1	S. E. 3	S. 3			
7	29.215	29.102	28.975	29.097	48.0	64.0	59.0	57.0	4	S.W10	9	S.W. 5	10	S. 6	S. 4	S. 3	S. 5	6 P. M.	mid night	1.030
8	29.200	29.418	29.468	29.362	29.5	31.0	22.0	27.5	10	W. 8	2	N.W.4	0	0	W. 5	W. 2	N. W. 2			
9	29.476	29.360	29.340	29.392	16.0	32.5	23.0	23.8	0	0	0	0	0	0	0	0	0			
10	29.336	29.290	29.235	29.297	23.0	41.0	33.0	32.3	3	Cirrus	0	0	0	0	S. 1	S. 1	S. 1			
11	29.244	29.240	9.265	29.253	29.0	49.0	39.0	39.0	0	0	3	Cirrus	0	0	S. 1	0	0			
12	29.316	29.320	29.378	29.338	33.5	48.0	36.5	39.3	0	0	1	S.W. 2	0	0	0	W. 1	0			
13	29.370	29.260	29.198	29.276	30.5	48.0	33.0	37.0	0	0	1	Cirrus	0	0	0	0	0			
14	29.100	29.163	29.268	29.177	38.0	48.0	37.0	41.0	2		4	N.W.8	0	0	S. W. 1	W. 3	N. W. 1			
15	29.228	28.960	28.920	29.036	33.0	44.5	39.0	38.8	5	S.W. 2	2	W. 1	0	0	0	W. 1	0			
16	28.839	28.865	29.015	28.906	37.0	36.0	32.0	35.0	6	W. 4	10	W. 5	10	W.	W. 2	W. 3	N. W. 1			
17	29.140	29.188	29.300	28.219	26.5	34.0	27.0	29.2	4	W. 5	10	W. 6	0	0	W. 3	N. W. 3	N. W. 1			
18	29.383	29.310	29.318	29.337	22.5	36.5	24.5	27.8	0	0	0	0	0	0	W. 1	W. 1	0			
19	29.306	29.228	29.225	29.253	17.2	39.0	31.5	29.2	0	0	0	0	0	0	0	0	0			
20	29.258	29.148	29.068	29.158	26.0	47.0	46.0	39.7	0	0	2	0	5	S. E. 1	0	S. 1	S. E. 1			
21	28.885	28.545	28.940	28.970	50.0	59.5	47.5	52.7	10	S. 10	10	S. 10	4	W. 5	S. 3	S. 4	S. W. 5	last night	4 P. M.	0.320
22	29.195	29.240	29.226	29.220	35.0	40.0	37.0	37.3	0	0	0	0	0	0	0	W. 1	0			

23	29.105	28.940	29.000	29.013	38.5	61.5	52.0	50.7	5	S.W. 3	4	S. 3	0	0	0	S. 3	0			
24	29.160	29.105	29.090	29.118	36.0	56.5	40.0	44.2	1	0	4	S.W. 5	0	0	0	0	0			
25	28.850	28.716	28.808	28.791	42.5	60.0	61.0	54.5	10	0	10	S. 3	8	S.W. 7	S. E. 1	S. 1	S. W. 3	5 A. M.	11 A. M.	0.420
26	29.102	29.200	29.230	29.177	40.0	42.0	31.0	37.7	10	W. 3	9	W. 4	2	0	W. 2	W. 2	0			
27	29.200	29.100	29.079	29.128	28.0	41.5	30.0	33.2	4	W.	0	0	0	0	0	0	0			
28	28.994	28.805	28.570	28.790	32.5	43.0	37.0	37.5	6	0	10	0	10		N. 1	E. 1	N. E. 3	3 P. M.	in night	0.900
29	28.652	28.935	29.122	28.903	35.0	40.0	35.0	36.7	10	NW 10	10	N.W. 5	10	0	N. W. 3	N. W. 2	N. W. 1			
30	29.253	29.222	29.175	29.217	29.0	39.5	33.0	33.8	2		0	0	0	0	N. E. ½	0	0			
Sums.				872.812				1209.7												3.118
Means.				29.094				40.3												

REMARKS ON WEATHER.

4. Wind changed from S. to W. at 6½ A. M.
5. Snow on the ground this morn.
7. Wind changed from S. to W. about midnight and blew with great violence.
19. Pools covered with ice during the whole day.
21. Wind blew with great violence from S. W. at 4 P. M.
23. Wind set in from S. W. at 3 P. M., made heavy clouds.
25. Hard thunder storm at 8 A. M.

EXPLANATION.—The state of the sky is indicated in this table by numbers from 0 to 10; 0 signifies perfectly clear sky, 10 that it is entirely covered with clouds, and intermediate numbers show the number of tenths clouded. The direction from which the wind blows is shown in the initials of the points of the compass. Its force is indicated by numbers; 0 meaning a perfect calm, and 10 the most violent hurricane.

MONTHLY EXTREMES.

	MAXIMA.				MINIMA.			
	7 A. M.	2 P. M.	9 P. M.	Month.	7 A. M.	2 P. M.	9 P. M.	Month.
Barometer, . . .	9th. 29.476	5th. 29.465	8th. 29.468	29.476	29th. 28.652	21st. 28.545	28th. 28.570	28.545
Thermometer, . .	3d. 60.0	2nd. 71.0	2nd. & 25th. 61.0	71.0	9th. 16.0	8th. 31.0	8th. 22.0	16.0

For the Cincinnatus.

THE TRUE AND NOBLE FARMER.

BY O. W. H.

Clear the brown path to meet his coulter's gleam ;
Lo ! on he comes behind his smoking team ;
With toil's bright dew-drops on his sun-burnt brow —
The lord of earth, the hero of the plow ;
First in the field before the reddening sun,
Last in the shadows when the day is done ;
Line after line along the bursting sod,
Marks the broad acres where his feet have trod.

These are the hands whose sturdy labor brings
The peasants' food, the golden pomp of kings ,
This is the page whose letters shall be seen
Changed by the sun to words of living green ;
This is the scholar whose immortal pen
Spells the first lesson hunger taught to men ;
These are the lines, Oh ! heaven commanded toil !
That fill thy deed—that charter of the soil.

True to their homes, these faithful arms shall toil
To crown with peace their own untainted soil ;
And true to God, to freedom, to mankind,
If her chained ban-dogs faction shall unbind.
These stately forms, that—bending even now—
Bowed their strong manhood to the humble plow,
Shall rise erect, the guardians of the land,
The same stern iron in the same right hand,
Till Graylock thunders to the parting sun,
The sword hath rescued what the plowshare won.'

THE CINCINNATUS.

VOL. II. FEBRUARY 1, 1857. NO. 2.

THE SEED.

GOD has condescended to write a book to direct his erring creatures in all that pertains to their relations and duties to him, and to each other—the book of inspiration—the Bible. This book is simple, and at the same time profound. Its pages beam with light, and the most ignorant and degraded are irradiated by its teachings. He has spread out before us another book—the book of Nature. It too, has its plain and obvious lessons; yet in its hidden and unobserved laws are depths, that the most profound philosophers have never scanned, and hights they have never scaled. To study nature is to study Deity; to read her lessons is to love, and loving, to adore. With reverence we would approach her sacred temple, and with distrust open her massive volume—her grand encyclopedia—and pen a paragraph on the seed and some of its characteristics:

The seed—"Within whose slender rind,
Life's golden threads in endless circles wind;
Maze within maze, the lucid waves are roll'd,
And as they burst, the living flame unfold.
Each ravel'd bud, fine film and fiber-line;
Traced with nice pencil on the small design.
The young Narcissus, in the bulb compressed,
Cradles a second nestling on its breast,
In whose fine arm a younger embryo lies—
Folds its thin leaves, and shuts his floret eyes.
Grain within grain, successive harvests dwell,
And boundless forests slumber in a shell."

How expressive these lines of the treasured wonders, and untold histories embodied in a single seed, however minute.

Let us examine as the physiologist, for a few moments, the seed; and in our successive numbers, trace it step by step upward and on-

ward, as it develops itself in germination, growth and maturity, in its parts of root, stem, branches, leaves and fruit; and these in their relations to light, air, moisture and heat. How beautiful in order, how uniform in manifestation. No wonder it should be taken as emblematic of all proper development—'the blade, the ear, and the full corn in the ear.'

The seed includes the embryo of a new plant, with its protective wrappers. There are no naked seeds, strictly so called; none which are not surrounded by what is called the pericarp. But this pericarp is sometimes very thin, and adheres so closely to the seed, that it can not easily be distinguished at the ripening of the fruit—blending with it so closely that it can not be separated. Every seed may be said to be the result, or to originate from, a fertilized ovule, and contains within it an organized body, which, placed in favorable circumstances, is developed into an individual similar to that from which it derives its origin. This embryo is the essential part of the seed, The seed consists of two parts, the episperm or outward integument, and the kernel within. A peculiar substance called *albumen*, is frequently formed around the embryo, the object of which is to supply the embryo with food at the time of germination. This albumen varies greatly in nature, consisting of starchy cells as in the grains; fleshy, as in the cocoa-nut, and horny as in the coffee. Chemically, this albumen is composed of oily matter, starch, and nitrogenized compounds. The embryo consists of *cotyledons*, or rudimentary leaves, the plumule, which represents the ascending axis, and the radicle or descending axis, and the point of union of the two.

The embryo varies in its structure in different divisions of the vegetable kingdom; thus, in acrogens and thallogens, it contains a cell or spore, with granular matter in the interior, without cotyledons. In endogens and exogens, there is a distinct separation of parts in the embryo, the former having one cotyledon, the latter, two.

The first part formed in the embryo, is the axis, having one of its extremities turned to the point whence the radicle proceeds, the other in the direction of the stem. At the point where the cotyledons are united to the axis, a bud is developed; this contains the true primordial leaves of the plant, and is known as the gemmule or plumule. In germination, the cotyledons sometimes remain concealed under ground, not appearing at the surface; at other times they emerge from the ground, in consequence of the elongation of the neck, which separates them from the radicle. The embryo being

a plant already formed, it is perfect in all its parts, although in a rudimentary state. When the seed begins to germinate, this embryo first lengthens its radicle, then what is called the caulicle, and afterwards sends the plumule upward, in the form of the stem and leaves. In most plants, the cotyledons are gradually raised to the surface by the extension of the caulicle, after which they become green and act as leaves. The phenomena attending the germination of a seed are most interesting. The external agents necessary to the production of germination, are water, heat and air. When a seed is exposed to these agents, it swells, bursts its envelopes, and the embryo contained is wakened into life. Now what has taken place to effect this interesting result. The water has penetrated the substance of the seed, softened its coverings, causing the embryo to enlarge, producing changes in cellular matter, rendering it suitable for the food of the young plant, and affording it, before it can take care of itself, with the materials of its nutrition. It also carries with it the gaseous, or solid substances, which the young plant requires. The quantity of water must not be in excess, otherwise the germinative power would be destroyed—we speak here of land plants. Water then performs in germination, two important offices, it softens the coverings of the embryo, and affords a solvent and vehicle to the substances which form the aliment of the plant.

Heat is no less important to this wonderful process of germination. Germination can not take place at a temperature below zero, and at that point vegetable life would be forever inactive. But the heat, like the moisture, must not be in excess, if so, it will destroy the vital principle. Air, likewise, is both essential to germination, as well as to the growth of plants. Were a seed totally withdrawn from contact with air, it would forever remain in a quiescent state. And we must remember, in this connection, that air is not a simple body, but is formed of oxygen, and what is called azote or nitrogen; and though not certainly known, yet it is probable, both are necessary to vegetation and healthful development. The action of air upon plants, at the first period of their development, presents the same circumstances as in the respiration of animals. It is the oxygen of air that gives the blood the qualities which fully develop the organs, and the same oxygen imparts a healthy and vigorous development to the plant. Here we learn how these various agents combine to quicken into life the embryo plant, and with what harmony and order nature performs her mysterious work, arresting the attention of the curious beholder to wonder and admire.

We have thus presented to our readers—as far as possible divested of technicalities—some of the more interesting characteristics of the seed, phenomena of germination, etc., with a view of extending our remarks, with similar particularity, to the roots, stem, leaves, etc.

For the Cincinnatus.

GEOLOGICAL AND MINERALOGICAL CHARACTER OF WESTERN NORTH CAROLINA.

THE rocks of the region under consideration are of the same age, Geologically considered, as those portions of Tennessee, Kentucky, Ohio, and other Western States; but they have been upturned on their edges, at various angles, by volcanic forces, and re-chrystalized by heat. The change thus produced upon them, is designated in Geology by the term Metamorphic. It was during the period in which the rocks of North Carolina were undergoing this change, probably, that the metalic veins were injected into them. Like the rocks of the States referred to, the Metamorphic Rocks of Western North Carolina are regularly stratified, and maintain, throughout extensive ranges, great uniformity of structure and mineral composition.

There has been no Geological survey of that part of North Carolina which includes your lands. Professor SAFFORD has made a survey of that portion of Tennessee which includes its Copper mines, and adjoins Cherokee county, North Carolina, on the west. He was appointed State Geologist, and made his first Report last winter, which has been printed by order of the Legislature. Two additional surveys of the Ducktown region have been made by Professional Geologists, whose Reports have been printed by those interested in the mines.

The metalic veins ascertained to exist in the district named, include *Copper ores*, *Lead ore* including *Silver*, *Iron ores*, *Black lead*, and *Gold*. *Ochres*, the best kind for *Paints*, also exist in one or two places.

The Geology of the mineral belt is simple and easily comprehended. The Smoky Mountain, on its Northern side, is composed of

sandstones, conglomerates, shales, and slates, alternating with each other, and so far altered by heat as to be called Semi-Metamorphic. The strata are tilted up at a high angle, and dip, generally, to the South-east. The upturned edges of the rocks are to be seen ranging from North-east to South-west, for hundreds of miles. Veins of Quartz rock, from a few inches to more than ten feet in thickness, are protruded through the fissures in these strata, and in many places give a fair yield of Gold. These Quartz veins are not found to be very numerous, in crossing the Northern side of the mineral belt.

To the South of this Semi-Metamorphic range, the Metamorphic Rocks occur, and extend to the southern margin of the mineral belt, They consist of *Gneiss*, *Mica Slate*, *Hornblende Slate*, *Talcose Slate*. *Argillaceous Slate*, and *Chloritic Slate*, with their usual variations. These several classes of rocks alternate or intermingle with each other, the separate bands being at times many hundreds of feet in thickness, while at others they measure no more than a few yards. Some ranges of metamorphic limestone, constituting, in places, a very good marble, are included in this portion of this mineral belt. This limestone often includes some lead ore, known to be *argentiferous*, or *silver-bearing*. The richest gold placers in Western North Carolina were found on Valley River, Cherokee county, along one of these ranges of limestone. Quartz veins, some of which are barren and others rich in gold, occur in these rocks also; and all the workable copper mines have been found within their range. But the copper mines, mostly, have been found in what are called the Iron Gossan leads, and but seldom in the Quartz leads.

The Metalic Veins of the region under review, occur among the strata of the rocks just described, as engraved plates in a book among the printed leaves They have not been produced by the causes which formed the rocks, but have been forced into their present position, between the strata, by volcanic action. As the engraving between the printed pages, so the metalic veins lie between the strata, 'dipping as they dip, and appearing in outcropping lines along the surface as they do.' The origin of these veins having been volcanic, the fissures into which they were injected, would be produced in the weaker rocks, or those whose layers would have the least adhesion, and separate most easily. Thus the greater portion of the discovered mines are in Mica slate, or Talcose slate, which, of all the classes of rocks existing here, would be the most easily fissured by volcanic agencies. Some of the copper mines opened, however, are in the Gneissoid rocks.

The metallic veins, though not of very frequent occurrence, in crossing the mineral belt, yet seemed to be arranged in groups. At Ducktown, Tennessee, there are at least seven or eight distinct veins of copper, running generally parrallel to each other, and limited in their North range to a width of about three miles. These metalic veins are usually composed of three distinct portions. The upper part is a mass of light porous *hydrated per oxyd of iron*, to which the miner's term *gossan*, is universally applied. This gossan is found on the surface at many points along the outcrops of the veins, especially on the knolls and ridges, Sometimes it occurs in great banks or blocks, scattered over a space of fifty or a hundred feet wide, while at others but little of it is to be seen. The depth to which it extends in the vein is variable, being often from seventy to ninety feet on the high grounds, but in the valleys perhaps about twenty-five. The depth appears to be the same as that to which it is necessary to go—in digging wells, for example—to reach water.

Immediately below the gossan there occurs a bed or mass of dark or *black copper ore*, some of which contains as high as fifty per cent. of metalic copper, but averaging from sixteen to twenty. Its vertical thickness is variable; at some points it swells out in great masses many cubic yards in volume; then again it becomes a thin, irregular layer. The average thickness, perhaps, is between two and three feet. In width, of course, it varies with the veins, which at some points are fifty and sixty feet wide, though the average is much lower. This bed of black copper ore has furnished, as yet, nearly all the ore shipped from the mines in Tennessee.*

The lowest, or third portion of these veins, is composed of a *compound sulphuret of iron and copper*. The two minerals are commingled in distinct chrystals, the sulphuret of iron, however, greatly predominating in the upper portion, while the sulphuret of copper, or the *yellow copper*, as it is called, increases in descending upon the lode.† This portion of the vein is continuous downward, and has no termination, probably, except in the great interior source of metalic veins.

Thus, then, these metalic veins are composed of three parts: the *Iron gossan*, the *black copper ore*, and the *compound sulphuret of Iron and Copper*. The last named ores are called, by the miners, the 'arsenical iron,' when the sulphuret of iron predominates.

* Prof. Safford.

† The term lode is applied to any regular vein, whether of metals or minerals or both combined.

The question very naturally arises, how has this condition of things been produced?

Says one: "It is quite evident that the whole vein up to the very surface (and far into the air, for it has suffered from the same denudation that has molded the surrounding country,) was originally a compound sulphuret of iron and copper. The rains on the hills finding their way down from the surface through the upper part of the vein, and issuing in springs at water level, and having gradually filtered down the copper to water level, and carried off the sulphur, leaving all the upper mass a red oxyd of iron, and underneath it a transverse layer of precipitated black oxyd of copper, below which, the process, of course, could not be carried on, and the vein remains a body of sulphuret of iron and copper."*

Another says: "The vein was once undoubtedly filled to the top with this material. (The sulphuret of iron and copper.) The gossan and the black oxyd have been derived from its decomposition, which has taken place mainly, as we think, through the action of water. The original 'arsenical' ore, in the slow progress of its decomposition downwards, has left behind the resulting light porous gossan. The heavier black oxyd, on the other hand, in some form or other, has been constantly carried downwards, until it has formed, resting immediately on the undecomposed mass, the bed of black ore as we now find it."

Among the specimens in the writer's possession, there are some of the yellow copper ore, in which the 'arsenical iron' is the exclusive gangue stone;† in others there are crystals of tremolite, or other earthy minerals allied to hornblende, disseminated through the arsenical iron, side by side with the yellow copper ore; while in others still, the arsenical iron is absent, and these earthy minerals, alone, compose the gangue stone. Now, wherever a copper vein has but little or none of the arsenical iron associated with its ores, there the explorer for copper leads must expect but little or none of the iron gossan on the surface, because there has been nothing in the vein from which it could be formed. In such cases, the lead must be traced by other indications, well known to Geologists

Another remark is needed, in reference to the origin of larger or

* Report of J. B. Lesley, Esq., Topographical Geologist.

† The term gangue rock is applied to any rock, or one which includes in its mass any valuable metals.

smaller amounts of gossan on the surface. The Ducktown mines do not occur on the mountain ranges, but are in a series of low ridges included in a cove between surrounding mountains. It is the opinion of some, that these hills were once of equal hight with the adjacent mountains, but have been reduced by the denuding action of water. It is a general rule, that metallic veins, not affected by chemical action from above, increase in width as they are followed downwards. It would appear from this, that metallic veins, in their protrusion into the strata, have contracted as they approached the surface, and that where denudation has diminished the hight of the mountains, the metallic veins must be of greater thickness, than where they maintain their original elevation. The Ducktown mines being on grounds many hundred feet lower than the mountain ranges, will present their veins in as favorable a position, as to thickness, as the mountain leads would show, if mined to the depth of one or two thousand feet. As, then, the amount of gossan exposed on the surface, must depend upon the thickness of the veins, and the proportion of arsenical iron in them, it will be readily inferred that the iron gossan leads, where they pass through the mountains, must necessarily make less show than on the low grounds.

There were doubts at one time, when the supplies of black ore were found to be limited, whether the mines of Ducktown would be permanent. This question could only be settled by testing the lower portion of the lode for yellow ore. This was undertaken by the Hiwassee Company, and a shaft has been sunk so as to cut the lode at the depth of seven hundred feet. The work is superintended by Capt. Harris, an intelligent English gentleman, familiar with mining. At the depth of one hundred and forty feet, an adit was run out from the shaft to the lode, the results of which he reports thus: 'The farther I get into the lode, the better it proves to be. I am at present five feet in the lode; if it continues to improve, it will surpass any thing I ever saw.' Again, at a later date, he says: 'The vein has been intersected by a cross-cut sixty feet lower, being two hundred feet from the surface. At this depth it has greatly improved. Masses of fine yellow sulphuret of copper occur in abundance. This is considered as settling the value of the mines.'

A word as to the productiveness of the Ducktown copper mines. The first mine was discovered in 1850, and no shipments of ores, on a large scale, could then be made, nor until long afterwards, for want of roads. Even at present it is forty-three miles to Cleveland, on

the East Tennessee Railroad, the nearest point at which railroad transportation can be reached. The earlier shipments had to be made to Dalton, Georgia, a distance of seventy-four miles. Notwithstanding these inconveniences, there had been 14,291 tuns of copper ores shipped from the Ducktown mines, before the close of 1855, which was sold for more than a million of dollars.

To judge of the productive capacity of these mines, it need only be said, that, in the month of September, 1855, *seven mines* produced a little more than 807½ tuns of ore, the value of which was about $80,000, or at the rate of nearly a million dollars per annum.

It may here be explained, that the copper mines of Tennessee and North Carolina, including those belonging to your Association, differ very essentially from those of the Lake Superior region. The copper veins of Lake Superior contain, often, a very large proportion of native copper, which can not be removed from the mines by drilling and blasting. A charge of powder, instead of fracturing the native copper in which it is inserted, merely shoots out the *tamping*, as the wadding is shot from an ordinary brass cannon, or the ball from a Sharpe's rifle. The slow process of cutting it up by the chisel is the only remedy. On the contrary, the Tennessee and North Carolina copper veins contain nothing but *brittle ores*, which are as easily fractured as common limestone, and a miner can throw out as many perch of it in a day as he could of ordinary limestone rock, excepting that the drilling, at times, may be more tedious.—*Report of* David Christy *on the Mining lands of the Nautahala and Tuckasege Copper Associations.*

LIME IN COMPOST HEAPS.

A Correspondent, from Fredericktown, O., inquires, "What is the benefit to be derived from mixing lime with compost heaps?" The inquiry is a proper and an important one; we therefore answer with pleasure.

Lime is strongly alkaline; only potash and soda excel it in this respect, unless it be in the case of some rare earths. All alkalis have a very strong attraction for acids, and also for water. As most vegetable matter is made of charcoal (carbon) and water, the lime, in trying to get a *drink*, (for it is an excessively thirsty customer) decomposes them and leaves the carbonaceous matter free. This is

its first action. But it is not contented with this. It craves to unite with some acid, and there being none near, it persuades the carbon to take a little oxygen from the air and become carbonic acid, that it may form a union with it, and become, what in chemistry is called, carbonate of lime. The lime then greatly accelerates the decomposition of compost heaps, and quickly rots them.

But if lime is put among manures rich in ammonia, (as all stable and *animal* manures are) then the ammonia, the most valuable part of the manure, must leave, and is indeed literally *driven* off; for in chemical combinations there prevails

"The good old law, the simple plan,
That they should get who have the power,
And they should keep who can."

The ammonia being alkaline, has the same appetites as the lime, but being the weaker of the two, is expelled, and the 'strong man' occupies its house. Hence, never put quick-lime among stable or animal manures, for thereby you lose the ammonia.

EDUCATION OF THE AGRICULTURIST.

No man is so high as to be independent of the success of this great interest; no man is so low as not to be affected by its prosperity or decline. Agriculture feeds us; to a great degree it clothes us; without it we could not have manufactures, and we should not have commerce. These all stand together, but they stand together like pillars in a cluster, the largest in the center, and that largest is agriculture. We live in a country of small farms and freehold tenements; a country in which men cultivate with their own hands their own fee simple acres, drawing not only their subsistence, but also their spirit of independence and manly freedom, from the ground they plow. They are at once its owners, its cultivators, and its defenders. The cultivation of the earth is the most important labor of men. Man may be civilized, in some degree, without great progress in manufactures, and with little commerce with his distant neighbors; but without cultivation of the earth, he is, in all countries, a savage. Until he gives up the chase, and fixes himself to some place and seeks a living from the earth, he is a roaming barbarian. When tillage begins, other arts follow. The farmers, therefore, are the founders of human civilization.—*Daniel Webster.*

FEMALE COLLEGES—VENTILATION, Etc.

Being anxious to record and commend all the progressive movements of the age, especially such as relate to the subject of education, we can not be indifferent to the growing interest felt and manifested by the masses, in favor of educating the daughters of our land. That the importance of this subject has been overlooked hitherto, we only need to mention that governments—state and national—have established, and munificently endowed, colleges and universities for the mental discipline of our sons, but neither land nor money has been reserved or appropriated that our daughters may become as '*pillars polished after the similitude of a palace.*'

Private enterprise, liberality and munificence, are now doing what government has criminally neglected to perform. The great increase of Female Seminaries of a high order, throughout our country, is one of the brightest signs of the times—one of the most cheering evidences of national progress and prospective greatness. Woman, directly or indirectly, governs the world, and the elevation and progress of any people, are to be determined by her improvement and position. She being the natural educator of the race, not only in the family, but in the school-room, how important that she should be thoroughly trained for this work, as well as fitted for all other departments of female duty and responsibility.

The education of the daughters of the household is the first step towards family elevation—home is made attractive, and the seductions of the saloon and theater contracted and avoided.

The noblest patrimony parents can give their girls, is a thorough, practical Christian education—a patrimony which can not be lost or alienated like real and personal estates, but when other resources fail, and adverse fortunes overtake them, may be rendered available—a patrimony which will be transmitted to our posterity undiminished. Many can not hope—even if it were desirable—to leave houses, lands and merchandise to their daughters; but all may, and should, polish these family jewels with the adornments of education, and fit them to shine as lights in the world. We do not propose that women shall be governors, legislators or judges, or occupy man's legitimate sphere in any department of life, but if we can

have a generation of educated, accomplished Christian mothers, they will furnish the race with a pure and noble race of men, qualified for any post of honor and usefulness in the Church or the State. The value of female education can not be overestimated, and we would contribute our mite in awakening a deeper and more active interest on this subject. We would crowd, to their utmost capacity, all the female seminaries and colleges, with the lovely gems which sparkle around every fireside; lovely, even in their uncultivated beauty.

The West is blest and honored with scores of these institutions of learning—institutions which can not be surpassed in the East—or in the world. We rejoice not only in their number, but in the taste, beauty, comfort and attractiveness of their buildings. Too little attention has been given to the healthfulness of apartments in our private as well as public edifices. The subject of ventilation has of late been eliciting the attention of scientific men, and it is generally conceded that thousands die annually, and other thousands are enfeebled for the want of pure fresh air. This is as effectual to bodily and mental vigor, as wholesome and nutritious food. The amount of pure air necessary to keep this 'harp of a thousand strings' in tune, is almost incredible, and when we reflect that air once inspired, is no longer fit for use, it is a marvel that so many live to mature life, especially of those who are shut up in small stove rooms. A few facts gathered from reliable sources, will illustrate the importance of considering ventilation in constructing seminaries of learning, applicable alike to private dwellings.

When the function of respiration is performed in a calm and natural manner, there are eighteen respirations per minute, in each of which efforts, about one pint of air is received and discharged from the lungs, and all the blood in the system performs a complete circuit, and is thus exposed to the purifying influence of the atmosphere, every three minutes. 520 cubic feet of air is used by a person of ordinary size, every twenty-four hours. In the winter season, when the combustion of the fuel that warms us, is co-operating with our own vital organs, in depriving the air of its oxygen the danger is very great, and multitudes become the victims of fatal disease in consequence. We have not the space for a full discussion of this important and vital subject, but we are happy to know that in one instance, at least, in the United States, a Female College has been constructed with a perfect system of ventilation, and that its advan-

tages are attracting the attention and commanding the admiration of medical and scientific men.

We refer to the new edifice of the 'Ohio Female College,' located in the vicinity of the 'Farmers' College,' at College Hill, six miles from Cincinnati. To secure perfect ventilation, and supply every apartment with pure fresh air, a tower has been erected, some two hundred feet from the building, into which a current of pure fresh air is constantly pouring, and thence passes by a subterranean passage under the building. From this passage there are openings into the basement, where the pure air comes in contact with extensive coils of steampipe, and thence rises by means of separate flues into every hall and room above, filling them in the coldest weather with a soft summer air, fully charged with the great supporter of life, oxygen. From every apartment there are other flues, terminating in the cupola, which carry off all impure air. By these means the entire atmosphere is changed twice every hour, night and day, summer and winter. The steam used for warming and motive power, is generated in a separate fire-proof building, two hundred feet distant from the college; and in case of fire, which is hardly possible, no less than one hundred and ten jets of water, and the whole power of the engine, can be put in instant requisition to extinguish it.

The entire edifice is admired by all who have given it an examination. It is three stories high, besides the basement; contains ninety-seven apartments, eleven spacious halls, seventy-seven closets, and eight bath-rooms supplied with warm and cold water. Each story is supplied with beautiful iron verandas or promenades, and the approaches to the building, front and rear, are of iron. Every room and hall, by a complete system of plumbing, is furnished with an abundance of pure, filtered rain-water, and the waste water is removed by the same means. The whole premises are lighted with gas manufactured of rosin on the premises.

As a whole, this College may well challenge the Union to present an equal. Other Seminaries of a high order are scattered over the country in healthy localities, and more or less adapted to the wants of the mighty West, so that parents are without excuse who permit their daughters to grow up in ignorance, and live and die in obscurity.

THE RAW MATERIAL.

A THOROUGH acquaintance with the materials with which he works, is of as much importance to the Farmer and Gardener, as to an artist or manufacturer. It is admitted on all hands, that no industrial pursuit excels in usefulness and dignity, that of the agriculturist; and our farmers need only intelligence and refinement, to become the true aristocracy of the land. Their field of labor is no narrow factory or workshop, but the open world, with all its wondrous scenes and changes and astonishing transformations, and demands of them minds to appreciate, as well as hands to gather its fruits.

It is also admitted that the farmer's calling is best calculated to cherish health of body, and we claim that it is also, if rightly viewed, pre-eminent for producing soundness of mind; and did the farmer make a proper use of his opportunities, we may confidently assert, that there is no calling at all comparable with it, in developing healthfully and proportionately *all* the faculties of mind and body. He has to witness, and in some measure direct, the most wonderful operations. The growth of each plant on his land, is a perpetual miracle. He may never fully understand it, but he should know of what the seed he buries, consists, and what it will require for food when the morn of its resurrection comes, and it rises to clothe the earth in beauty, and become fit sustenance for man.

Hoping to induce some of our young farmers, at least, to study more thoroughly, their noble calling, we have determined to give, in a series of articles, an outline of our knowledge concerning the materials with which the agriculturist has to deal.

The most obvious inquiry, in commencing our study, is, of what is the world about us composed? The ancient philosophers answered, of four elements: fire, air, earth and water. But the chemists of a later period have pursued their investigations in a manner quite different from that of the wild speculators of ancient Greece. Taking a hint from the inquisition, they put unknown substances to the torture, either of corroding acids, or the blazing furnace—the forked lightning of the battery, or some such 'devilish enginery,' and compelled them to tell in their own language what they are, and of what they are composed. If the substance endure the bite of the sharp-toothed acid, and the rush of the electric thunderbolt—

which science has stolen from Jupiter Tonans—or the burning fiery furnace, without losing its identity, then it is ennobled to the rank of an element. For instance, take the metal iron. A piece of it exposed to the air, in process of time loses its great strength, and crumbles into a red powder, but it is not decomposed; it has merely united with oxygen, which can be expelled, and the bright, strong iron be brought to view again. So, if it is dissolved in an acid, or submitted to the electric current from the battery, or intensely heated in the furnace, it may unite with other substances, but it shows clearly that it is made of nothing but iron, and it is therefore an element.

Chemists, having treated every substance upon which they could lay their hands, after this fashion, have come to the conclusion that there are some *sixty* elements, instead of the four of the old Philosophers; and each of these is either metallic or non-metallic. There are over forty metals, but many of these are rarely met with, and need not be mentioned in this connection, as they have but little or nothing to do with agriculture, while those that are concerned in vegetable growth, will be considered under the head of the 'earths.'

The non-metallic elements are mostly abundant and active in the organic world, the world of life. Even here, however, most of them are only occasionally discovered. The vital power, '*the breath of life*,' having over sixty elements to choose from, forms nearly all its multitudinous products with only four, viz: Carbon, Oxygen, Hydrogen and Nitrogen. As the last named element is found only in small quantities, we may say that the vast vegetable growth of the world is made up of charcoal and water—being the product of the first three.

WATER is the great carrier or medium of exchange among the elements; or rather, the vehicle which transports the atoms in their journey about the earth's crust. No doubt every one, in these temperance days, thinks he knows all about water; but it has some curious properties which are not so well known. One of these, is, its power of combining with many substances, and becoming perfectly solid, and remaining so even at high temperatures. Some of our hardest minerals, contain water chemically combined. When we purchase one hundred pounds of common salt, a portion of our purchase money goes for water that we might find much cheaper in the well or river. So with saltpeter, soda, and other salts. We cease, then, to regard water as necessarily a liquid at ordinary temperatures. When its particles are bound to other materials, by the

strong grasp of chemical affinity, they may so strongly retain their places, as to require great force to part them. It also becomes solid, as every one knows, when its temperature is reduced to thirty-two degrees Fahrenheit. In assuming this form, it expands, as many a broken water-pitcher, carelessly left in a cold room during this severe weather, can testify.

It is this expansive power of freezing water, that renders it such a useful agent in the preparation of soils. It penetrates easily the soft rocks, and the expansion of the first hard frost crumbles them to dust; even the solid granite loses by the same process, little by little from its surface, until the whole huge mass is ground into light and mellow soil. Hence, the great advantage of exposing the loosened earth to the thorough action of winter frost, as is frequently done in situations where it will not wash away, by throwing the earth up in ridges in the fall.

This expansion of water, near the freezing point, prevents our rivers, ponds and lakes from being wholly converted into ice during our long cold winters, and is often instanced as exhibiting the infinite skill of the Creator in keeping all the parts of this complicated machinery in simple harmonious action.

Were the ice heavier than the water, layer after layer, during a hard frost, would fall to the bottom, until the whole mass would be solidly frozen, and the summer sun would not have power to entirely thaw it.

SALT AND GUANO.—Recent experiments go to show that common salt is a valuable addition to all applications of guano to the soil. It not only has a tendency to give strength and hardness to the straw, (which guano weakens,) but prevents the loss of ammonia, which is constantly going on, even in a dry atmosphere. M. BARRAL, the editor of a French agricultural journal, says:—

"We left in open air, in plates, during fifteen days, equal weights of the pure guano and guano previously mixed with salt. At the end of that time, we examined anew the amount of nitrogen, and found that the pure guano had lost 11.6 per cent. of nitrogen, while that mixed with salt had lost only 5 per cent." The refuse salt from fish packers is recommended for this purpose, and any refuse salt would probably answer the purpose.

VALUE OF WEST. N. CAROLINA LANDS FOR PASTURAGE, WOOL AND AGRICULTURE.

To understand the agricultural value of these lands, a few remarks are needed. Soils, it is well understood, are derived from the decomposition of rocks; and the combination therewith of decomposing vegetable and animal substances renders them fertile. Some soils are produced from rocks *in place*, while others are derived from rocky materials *transported* from other points by currents of water or the action of icebergs, as in the case in districts covered by *Diluvium* or *Alluvium*. There are no such deposites in Western North Carolina, as diluvial or alluvial, excepting along the courses of the rivers. The soils of its uplands, therefore, must have been derived from the rocks upon which they are based, except where the superior portions of the mountains differ Geologically from the inferior, and have sent down, by the rain currents, a portion of their decomposing materials to mingle their elements with those of a dissimilar character below. The Geologist, then, by examining the ranges of these Metamorphic Rocks at one point, can, without the labor of visiting them, decide with great certainty as to the quality of their soils at other points. He knows that the only material difference which can exist in the soils at any two points, along the same strata of rocks, will depend, not upon differences in the *inorganic* elements composing them, but in the greater or less depth to which they have accumulated, and the amount of *organic** elements intermingled therein from the decomposition of vegetation. This rule has some exceptions, but they need not be noticed here.

From experiments made, it has been determined that the mountain lands of Cherókee, Macon and Jackson Counties, North Carolina, are well adapted to the growth of the tame grasses and clover, and are admirably adapted to pasturage, either for sheep, mules or cattle, but especially for the former.

But to say that the soil and climate of Western North Carolina

*The *inorganic* elements of rocks and soils are potash, soda, lime, magnesia, manganese, iron silica, and alumina.

The *organic* elements essential to vegetation, are oxygen, hydrogen, nitrogen and carbon.

are better adapted to the raising of sheep than of other animals, is to state only half the truth. North Corolina can be made to compete successfully, in wool-growing, with the world at large. The altitude of the country, the purity of its atmosphere, the mildness of its climate, the abundance of its never-failing springs of pure water, its freedom from all malarious influences, its unvarying healthfulness, all combine to make it the most attractive point of immigration in the Union; and when once it is generally known that it presents the most inviting field for the production of Wool, one of the great staples of the country, the wool-growers will not fail to accept the advantages it offers.

It is no exaggeration to say, that Western North Carolina can be made to compete with the world, in the production of the finest qualities of Wool. There can be no appreciable difference, as to climate and other conditions, between it and Tennessee, which has already competed with the world, for the Golden Fleece, and won the prize.

Mark R. Cockerell, Esq., an extensive Wool-grower of Tennessee, attended the World's fair in London, in 1851, and presented some of his wool in competition with the wools of Europe. The contest, under the rules, was between countries, not individuals. The premium of the 'Golden Fleece' was awarded to Tennessee, and Mr. Cockerell bore the pleasing intelligence home to his fellow-citizens. The Legislature of that State, the winter following, passed a resolution tendering Mr. C. its thanks, and ordering the preparation of a gold medal to be given him as a token of their respect.

On its presentation, among other things, he said:

"Germany, Spain, Saxony, and Silicia were there; the competition was hònorable, strong and fair. Nature gave me the advantage in climate, but the noble Lords and worthy Princes of Europe did not know it, until we met in the Chrystal Palace of London, before a million of spectators. While their flocks were housed six months in the year, to shelter them from the snow of a high latitude, and were fed from the granaries and stock yards, mine were roaming over the green pastures of Tennessee, warmed by the genial influence of a southern sun—the fleece thus softened and rendered oily by the warmth and green food, producing a fine even fiber."

But to return to the lands of North Carolina. The general bearing of the mountain ranges is from N. E. to S. W. A large proportion of the lands are thus found facing the South. This exposure

to the sun serves speedily to melt off the occasional snows which fall during the winter; and I am assured that it is very rare for snow, on these inclinations, to remain more than thirty-six or forty-eight hours at one time. As *blue grass* and *white clover* remain fresh and green the year round, their substitution for the native grasses would secure the best of sheep-pasture through the winter, and but little grain would be needed by the shepherd for the support of his flocks.

Nor will there be much waste lands in these mountains. The surface of the country, generally, is smooth, the rocky precipice being limited mainly to the courses of the rivers. A rich carpet of native plants and grasses, in spring and summer, everywhere covers the woodlands, affording ample pastures for flocks and herds. But these wild pastures, in autumn and winter, grow harsh and dry, and are of little value as food for stock. Besides, as the country is settling up, and domestic animals multiply, this pasturage wears out to some extent, and is insufficient for the support of the stock of the settlers. The substitution of blue grass and white clover, will remedy this defect. This change, with the aid of a little capital, may be easily effected. The practice prevails of burning the fallen leaves from the ground every spring, to destroy the underbrush, and promote the growth of the native pasturage. But these burnings have done more than merely to keep down the growth of tangled forests, that the cattle may have ample pastures. They serve to keep the woodlands in a constant state of preparation for the introduction of the tame grasses among the forest trees, as is the custom in Kentucky, and will supersede the necessity of clearing up the grounds preparatory to the establishment of sheep farms.

Wool growers, then, we repeat, must be attracted to North Carolina as soon as they come to a knowledge of the advantages to be gained in that region. It will cost no more to purchase lands there than elsewhere, and it will cost two-thirds less to *feed*, the year round there, than it does in Vermont or Pennsylvania, and the wool will be more valuable when clipt.

The burning of the fallen leaves, alluded to above, does no material injury to the forest trees, but leaves them, generally, to continue their growth. The size of the trees is about equal to that of those on similar geological formations in Kentucky and Ohio—in some places low, in others lofty. In the coves of the mountains, however, there are trees of equal size with those produced by the best lands at the North. Take the following measurements, in Tuskee-

gee Cove, near the Little Tennessee River, in Cherokee county, North Carolina, as examples—the line being stretched around them, about four feet above the ground :

Black Locust, in circumference, feet,	6½
Buckeye............"........"........	12
Shell-bark hickory,...."........"........	9
Sugar maple,........"........"........	8
White maple,........"........"........	7½
Chestnut,............"........"........	19¾
Yellow poplar,......."........"........	18½
Black oak,..........."........"........	10
Beech,..............."........"........	11

In other localities the wild cherry, black walnut, and the several varieties of hickory and oak, attain a size about equal to these. In many of the coves, as well as in the less exposed situations on the mountain sides, where the trees are shielded from the winds, they often grow up as straight as arrows, and may yet supply a large amount of *ship timber* to the Southern sea-board, when the completion of the Railroads to the North-west, shall have stimulated commercial enterprise in our Southern cities. The very last conversation I had with that eminent philosopher, Dr. JOHN LOCKE, just before he was taken from us, was on this subject. Taking into view the fact that the forests have mostly been cleared away on the south of the Blue Ridge, and that trees suitable for ships are only produced by the growth of hundreds of years, he expressed the opinion, that the timber of the mountains, along the line of the Rabun Gap Railroad, would not only be in demand for lumber to supply ordinary purposes at the South, but that it must ere long become indispensable to its supply of *ship timber.*

But the slopes and coves of the mountains of North Carolina will be used for other purposes than pasturage and as resorts for ship timber. Portions of them, adapted to the purpose, by presenting a southern exposure, will be devoted to the cultivation of the *Grape.* Many of the coves, in the midst of the mountains, are admirably adapted to this purpose. North Carolina gave to the country the far-famed *Catawba Grape*, which now enriches, by its luscious clusters, the vine-dressers of Cincinnati. Why should she not enrich herself by the extensive cultivation of the vine, which her own soil spontaneously produced?

The Northern sides of these mountains have also their economical value, besides being the producers of the loftiest timber. They will not only supply the richest summer and autumn pastures, when sown in blue grass and white clover, but will yield an abundance of

hay for winter feeding, when set with red clover, herd-grass and timothy.

The Peach and the Apple, too, will rarely fail to yield their fruits in abundance, when planted on the northern sides of the mountains. Held back in their development of buds and blossoms in the spring, by the chilliness of their position, the fruit will rarely be sufficiently advanced to be injured by the latter frosts. Apples and Peaches both are cultivated in a small way here, and are unsurpassed in delicacy of flavor by those of any other section of the country. On the completion of the Cincinnati and Charleston Railroad, the fruits of North Carolina's mountains will doubtless compete, in the Cincinnati markets, with that of our own enterprising Orchardists. Or, to guard against failures in the future, why should not the fruit-growers of Cincinnati double their chances by having orchards in North Carolina, as well as in Ohio? The fruit crops, I was assured, in many places, do not fail more than once in four or five years.

The duration of the winters, in North Carolina, usually, have a range of about three months. Plowing, by the best of farmers, is mostly done, for the spring crops, in the month of February. March, generally, is too stormy, and the weather too uncertain, for out-door's labor.—*Extract from the Report of* David Christy, *on the Mineral lands of the Tuckasege and Nautahala Copper Association.*

THE POISON STRYCHNINE.

This drug, which has lately become so notorious for destroying the lives of human beings—as in the case of the infamous Dr. Palmer, recently executed in England—is a most deadly organic poison. A dog has been killed with the sixth part of a grain of it, and a human being with less. When introduced into the stomach it acts with fearful energy, causing lock-jaw immediately, violent spasms, and death in a few minutes. It is odorless, but so intensely bitter as to be perceptible to the taste when one part is diluted in a million parts of water. The composition of strychnia is carbon 44, hidrogen 24, oxygen 4, nitrogen two equivalents. It is colorless, and forms soluble chrystalized salts. It is an alkaline base, and is extracted

principally from the *Strychnos nux vomica.* The tree from which it is obtained is of moderate size, and grows in several parts of the East Indies and the Island of Ceylon. Its fruits are large orange-colored berries, the pulp of which is the favorite of many birds. The seeds contain the deadly poison. They are flat and round, about an inch in diameter, and gray in color. These seeds were used as a medicine, and as a poison by the Hindoos, long before they were known in Europe. Many of the natives of Hindostan often use it as people use opium. They commence with taking the eighth of a nut a day, and gradually increase their allowance to an entire nut, which would be about twenty grains. If they eat directly before or after food, no unpleasant effects are produced, but if they neglect this precaution, spasms are the result.

The bark of the tree is also poisonous, and from its resemblance to Angustura or Cusparia bark, a tonic medicine imported from South America, caused a great deal of alarm and excitement in Germany, in the early part of this century, by being mixed with that bark. No sure antidote has yet been discovered for this poison, but some chemists have attained to great skill in detecting it, when administered as a poison. The following is Dr. THOMPSON'S method of detecting the one thousandth part of a grain:

Having placed a drop of strong sulphuric acid on a piece of glass, add to it a small quantity of the suspected substance, and stir the whole together, so as to favor solution, then sprinkle over the mixture a little powdered bichromate of potash, and gently move a glass rod through the fluid. If strychnia be present, a violet color of considerable beauty will be almost immediately produced, which after a few minutes will fade into redish yellow, but may be renewed by the addition of more bichromate, so long as strychnia remains undestroyed in the mixture. In this way the thousandth part of a grain of that alkaloid may be made to yield a very decisive indication. The points to be noticed are, that sulphuric acid alone, produces no apparent effect, and that the action begins at once round each particle of the bichromate, so that if the glass be held in a vertical position, streams of a colored fluid may be seen to flow from each particle, and if at this time the whole be slowly stirred, the entire bulk of the fluid will speedily assume the same characteristic of tint.

EDUCATE LABOR AND SET KNOWLEDGE AT WORK.

There has ever been a prevailing idea among mechanics that science, its numerous pursuits and studies, are not in their power of comprehension. They seem to possess an inherent prejudice against approaching the *dignity* of the scientific man. Truly, the two are separated widely, by a foolish assumption on the part of the former, and an innate sense of importance on the part of the latter. Yet, on the other hand, they are closely connected by the great object which they are both striving to gain. It is evident to all that this should not be. The man of science must credit the mechanic with that which is his just due, and in return the mechanic must acknowledge the power of the scientific man. But both must be alienated—transferred. The mechanic must go to the study, and the student to the workshop. In this manner, we would 'educate labor and set knowledge at work.' They will then be no longer separated. Theoretical principles will be changed to axioms, and practical workings will then be thoroughly understood, as interwoven with the complicated, yet plain, truths of science. The workman, in educating labor, will find—as every one does—that knowledge is easily acquired and readily possessed, and that its only legitimate aim is usefulness. The scientific man, however, must aid to accomplish this much desired result, by throwing off the imperious cloak of dignity in which he is wrapped. He will learn then that he is indebted, and largely, too, to the mechanic, for the triumphant results of his theoretical principles, and that if they were more closely connected in the every day transactions of their professions, they would be deserving of great merit, and their success prove to be of the utmost utility to mankind. When the scientific man had set knowledge at work, the results of all new theories could be established at once, before the mechanic had commenced to work out in practice the supposition laid before him. And thus it is on the other hand—the mechanic would at once determine the probable result and utility of the alledged theorem presented for his consideration. Would not these results be of value to mankind, and the progression of science be greatly aided? When this is accomplished, we shall look in vain for alledged inventions of 'perpetual motion,' and the mechanic arts

will progress in a greater ratio—every one possessing merit, and, of course, utility.

But, before going farther, let us make a short retrospection, and, instead of condemning, let us approve. The mechanic is every day educating labor, and we are seeing exhibitions of the good fruit resulting therefrom. They are reading those journals which represent the sciences and the mechanic arts as possessing a relationship to one another, and also other equally useful works, all tending to imbue the mind with a just appreciation of the rule heading this article. The day is not distant when every mechanic will become allied with the sciences in the most sure and beneficial manner—that of educating labor. We can look to him as the just and only promoter of science, and as the future instructor of its teachings.

On the other hand, we do not see the scientific man stepping out of the imperious cloak of dignity in which he is wrapped. He still stands aloof, repels the idea propounded by the mechanic, of setting knowledge at work. The thought never before occurred to him that he might apply the immense philosophical research which knowledge has brought to his view to practical and useful purposes. If these researches or philosophical truths were known to the large class of inventors, they would be the means of causing great progression in invention, and of bringing new results to light, exceeding in importance and improvement those of prior claim. Every principle or philosophical truth, however trivial, is useful, and by proper application can be made the cause of invention.

This is, comparatively, a new field; the harvest is large, but there are few reapers; more must be admitted. Let us, therefore, hope that more will enter, and by another season learn that the harvest is garnered by the sickle of improvement. We doubt not that it will meet with a cordial reception.—*The Inventor.*

PROFITABLE SHEEP.—"I wintered eighty merino sheep, and this spring sold twenty-six for nine dollars each. Washed and sheared fifty-four, from which I got 281½ lbs. of wool, which is a fraction over five pounds six ounces per head. Raised thirty-four lambs.—The sheep were fed on clover hay and corn fodder, until they commenced lambing, and then I began feeding a little oats, and increasing it to half a bushel per day, and continued it through."

[In a recent spirited discussion had in the Cincinnati Horticultural Society, on the value and economics of Dwarf Pear Culture, numerous papers were read, pro and con; some of which we have thought might not be unprofitable or uninteresting to our readers. Accordingly, we have selected for this number, the *leader*, which from its bold position may be said to have waked up a most spirited debate, in which a goodly number of the members took active part, ranging themselves according to their respective views.—ED. CIN.]

DWARF PEAR CULTURE.

BY WILLIAM STOMS.

IN accordance with a motion made by myself, on the 4th Oct., the Cincinnati Horticultural Society has set apart this day for the discussion of Dwarf Pears.

My own assumption is, that the Pear grafted on the Quince stock, is unprofitable for general cultivation; ill adapted, and a humbug. Before entering upon the merits of the case in question, I wish simply to notice a fact, which has been observable, already, upon this, as on other occasions, i. e.—a *squeamishness* among some of the older members of the Society, whenever an important matter was proposed for discussion. Old fogyism, and chilly conservatism, are all well enough in their place; and their place is among the fossils of a long past and gone generation. They belong not, certainly, to the present, when Young America is already booted and spurred, and taking the *short-cut* for the goal of his ambition. Some have gone so-far as to predict the downfall of this Society, unless agitation should cease upon important topics. Some of those same prophets are now in this hall, whose trembling nerves gave token that the Strawberry question was to be the rock upon which the Cincinnati Horticultural Society was to make complete shipwreck.

These extreme fears have of course proved a delusion; for never, since its first organization, has the Society been in such a prosperous condition as now. Its numbers have increased, and are still increasing, quite as fast as the most progressive could reasonably expect. As for the character of its membership, I presume it will compare with any other organization of its kind in the United

States. This much can be stated without arrogance, or charge of vain boasting on our part, as complimentary notices can be produced without number, from eminent individuals all over the country, going to show the estimation in which the Society and its opinions are held. How important, then, that the members should carefully reflect upon, and investigate every subject upon which they may be expected to express an opinion. Without this care in passing judgment, our sentiments would only be calculated to mislead the uninitiated in new enterprises, and ultimately blast the most sanguine expectations of its friends. In discussion here, as elsewhere, temperance, amenity, courtesy to opponents, should always characterize deliberations; recollecting that 'error of opinion can be safely tolerated, when reason is left free to combat it.' This was the motto and the polar star, that guided the sage of Monticello in all his brilliant career through life. It was applicable to him, and it is equally so to us. Assertions are one thing, *facts* quite another. It is the latter which this Society should seek to disseminate, if its basis is to be permanent. On this foundation, we can not but stand; without it, our fall is inevitable.

Of what is past, it is the duty of all not to rub the sore, but simply to bring the healing plaster. Thus much I have thought it necessary to say by way of exordium; and now to the subject, straight.

Before referring to the opinions and experience of others in the growing of Dwarf Pears, I will call the attention of the Society first, to those of my own. In *The Cincinnatus*, for September, I have very briefly stated my views, which, claiming the indulgence of members, will beg permission to read—at least, in part.* (See *Cincinnatus*, for 1856, page 430.)

Thus, you will not fail to see that JOHN JAY SMITH accords with myself in the opinion that the man who undertakes to grow Dwarf Pears, has got a world to do. Thus you will also observe that Dr. J. M. WARD, one of the most extensive Pear culturists in America, comes to the conclusion that to raise Pears on the Quince stock, a man must, as it were, eat, drink, sleep and die with them. He must have the patience of JOB, the hundred eyes of ARGUS, and the hundred hands of BRIARIUS, to secure—what? why, simply a few

* Various references are made in this article which were read by Mr. STOMS, but are here omitted, for want of room. The reader is referred, however, to the several works quoted from.

pears that—when all the expenses are reckoned into the account—must cost him about ten cents a piece. Rather too much, it strikes me, for so little. For ourself, we prefer to buy our pears in market, grown upon good healthy standards. We have never seen any in market yet, grown in any other way, nor do we soon expect to! The next witness which we propose to call upon the stand is 'JEFFREYS,' whose critiques are contained in the numbers of the *Horticulturist* published at Philadelphia.

JEFFREYS, is the *nom de plume* of some gentleman whom I do not know, but would be perfectly willing to leave to my friend, Mr. BUCHANAN, to say, whether or not, his authority does not consist of the very best stamp. In the July number of the *Horticulturist*, he says:

"I hope Dr. WARD is not done with the subject; when he has, I have a word or two to say. Till then, I *now* say—*en passant*—he is perfectly right. The cat will come out of the bag, in this Dwarf Pear business, after awhile. The nurserymen have had a capital run of them for years past, and not a small one out of me, for a moderate man. I wish we *orchard* pear-growers—not nurserymen—could have a 'protracted meeting,' and an opportunity to tell our individual 'experience;' I guess we'd have a sympathizing time of it, and that without declaring a 'dividend' in the way of profits!"

Now, then, I will read the article upon which allusion is here made. It is in the May No. of the same work, page 216.

In the October No. of the *Horticulturist*, is a criticism from the pen of JEFFREYS, which ought to satisfy any reasonable man that Dwarf Pears are a humbug. It can be found on page 459, which, with your generous permission, I will read.

We presume every member of this society has heard of the renowned Col. WILDER, of Boston. He is one among a very few men of whom it may be said, that his fame is world-wide, on the subject of fruits generally, and Dwarf Pears in particular. What is his position now? After bloviating for the last ten years upon the beauties of Dwarf Pear culture, he has veered round, backed out, and will keep 'bobbin' until we shall find him at last vindicating with us, their entire annihilation for orchards. In some of his late lectures, the Col. now advocates the plan of setting the Dwarf Pear so deep into the ground that the roots may grow out from the Pear, instead of relying upon that of the Quince. But we will give his exact language contained in an address made before a Legislative

Agricultural meeting in Boston last Spring. He says: 'The Pear upon the Quince should be planted deep enough to cover the place of junction three or four inches below the soil, and then the Pear will throw out roots for itself, and the result will be, not only early fruiting, but also strength and longevity!'

Let this suffice. If it is desirable to get the Pear stock to throw out roots, why the necessity of any junction! Why graft on the Quince at all? How does the gentleman know of the great longevity? Has he tried it? No, gentlemen, this is a new thing with the intelligent Col. Another jump at conclusions without practical experience—another moon-shine theory—in short, another humbug! When Col. WILDER shall have tried this new project for some twenty years, then it is, that he can speak with some truth and confidence as to 'early fruiting and longevity.' Besides, will the Pear, under the circumstances which he so flippantly describes, continue to be a dwarf? Does not every Pomologist and nurseryman in this hall know, that the tree must necessarily assume the character of a standard? It also assumes the character of a layer tree, being nourished by roots of its own variety. And yet, here it is, palpable as the noon day sun, that one of the greatest advocates of the Dwarf Pear in America, is found abandoning his early love under an ingenious disguise—a transformation, which entirely changes the Dwarf into a standard tree. Why does not Col. WILDER state these things in plain terms? Perhaps he may have written a book on Dwarf Pears. If so, that fixes him 'Dwarf' for ever.

For our part we do not believe that any *grafted* Pear tree, has ever attained the age ascribed by nurserymen in France and elsewhere. Mr. DOWNING, in his work on Fruits, page 553, says: "It is a well established fact, that a seedling tree, if allowed to grow on its own roots, is much longer lived, and often more vigorous than the same variety, when grafted upon another stock; and experience has also proved, that in proportion to the likeness or close relation between the stock and the graft, is the long life of the grafted tree."

To carry out this universally acknowledged principle, then, what can we expect as to the longevity of the Pear grafted on Quince; where the two varieties of wood are so entirely dissimilar? Is it not the hight of absurdity to presume that they can be of long life? or that they can ever be depended on for exhuberant bearing? There must be an affinity then, between the graft and the stock; and the closer that affinity is, the better; for like produces like, in the vege-

table, as in the animal kingdom. The likeness between a Pear stock and a Quince, is about as near as that of a man and a monkey.

Mr. DOWNING sums up, in his work on Fruits by saying that, "The average life of the Pear when grafted on the Quince, is reduced from fifty years—its ordinary duration on the Pear stock, to about a dozen years." So, you will not fail to observe, that even in his day, their popularity began vastly to wane and subside. Since then, observation and experience, except perhaps in certain quarters, have almost entirely thrown them overboard. The President of the 'Ohio Pomological Society,' at their convention in Cleveland, last January, said, 'He could not go into this work with that enthusiasm some manifest. He had looked with much interest to the results of Messrs. PARSONS' experiments, but he had understood with much regret that they had proved a failure.' This is what that gentleman thought some months ago, with respect to Dwarf Pears. If his mind has undergone a change since that time, I am perfectly willing to give him the benefit of that change. A wise man changes his opinions; a fool, never.

You will be told by Mr. BUCHANAN, and others, that they can show a few very handsome Dwarf Pear Trees, not more than four or five feet high, containing upon each some five or six beautiful Pears. I have no doubt of this. JEFFREYS saw the same thing in the nursery rows when he made his purchases. I saw the same when I purchased mine; but, the great misfortune is, *we never saw them afterwards!* I admit that when trees are very young, some varieties will be thrifty, and give a slight show of fruit. But the difficulty is, their tale is soon told. Life to them is a mere shadow, and like a brief candle, soon goes out; if it be not already flickering, when you buy your trees.

Mr. F. M. MEARS, of Salem, had fifty Dwarfs, which he set out some six or seven years ago, and had the same encouragement of these gentlemen, for the first two or three years. Their glory however, soon departed, and he has now scarcely a tree left to help him sing a requiem over the remains of their sad fate. This is the kind of property which you will be asked to indorse, gentlemen, with your votes, when the question comes up for final action. It matters not to me, personally, one way or the other, how you vote, so it be understandingly done, and that you send forth sentiments not at variance with truth and justice. I have nothing at stake, further than to maintain the character and veracity of this Society,

in its public and and private relations, to the great interests of Horticulture. I wish to injure no man's business, through this, or any other medium.

For want of time, much testimony bearing directly in favor of my position has been omitted; but enough has been produced, I trust, to satisfy the most skeptical, that Dwarf Pears will not answer for general cultivation in this country. Those who think differently will of course show forth the reasons for the faith that is in them.

Pears are a great luxury, and far be it from me to discourage their growth and cultivation. If our markets are to be supplied with this delicious fruit, it will not be from productions on the quince stock. Set that down in your note book,—let others think as they may.

If asked by any gentleman as to the utility of setting out Dwarf Pears, I would unhesitatingly discourage him from doing so. For the sake of a little pastime in pinching, pruning, feeding and giving drink, but without any expectation of getting his money back, I would recommend the planting, in a rich garden soil, two or three each, Louisa Bon de Jersey, Vicar of Winkfield, and Duchess d' Angoleme, but nothing more. If these few did not, in two or three years, cool off his doting frenzy, then he might go further.

From my three hundred trees I have not yet got the first pear! Perhaps the good time is coming. Patience is a great virtue, and I am endeavoring to practice upon its golden promises. When my pears do show themselves, you shall see some of them upon that table; for, having failed in my dreams of *substantial* gain, I shall now go in for what little *glory* awaits me—in this great Dwarf Pear issue.

Whenever the friends of Dwarf Pear Culture shall come forward, and with 'bills of particulars' show me one single orchard of five hundred Dwarf Pear trees that have been ten years planted, which have borne fruit *successfully* and *paid cost*, then I will give up this contest. But I defy the opposition to any such showing. They can not do it.

William Stoms.

Cincinnati, January, 1857.

SUGGESTIONS TO MECHANICS AS TO THE PROPER EMPLOYMENT OF THEIR LEISURE HOURS.

EDITORS OF THE INVENTOR:

I noticed in the last issue of *The Inventor*, an invitation to mechanics to contribute to your valuable journal, articles of general interest to that class of your readers. I do not know that I can send anything that will be particularly interesting, but I am going to try, and you may 'print' what I send, or not, as you shall judge proper.

Mechanics, as a general thing, sadly neglect their own interests by not 'reading themselves up' in their several professions. The mechanic thinks and feels (and rightly too,) that after the toil of the day is over, he needs some recreation to compensate him for his close application to business. But the difficulty lies in the choice of his recreations. I have heard it said, and I think it true, that anything which will direct the mind to any other channel than the one which has occupied it through the day, will tend to recreate it. It is the same with the body. The carpenter will shove the plane all day, and then walk two miles to his home, and feel fresher than when he left his work.

I once had an invitation to join a gymnastic club which met two evenings in a week. The reply I gave was, that my labor of ten hours a day was work enough for me. My friend said that the exercise in the club room actually relieved him of all weariness. Now, I think that after the toil of the day, if the the work is sedentary or confining, a walk of a mile or two, and then an hour or two spent in reading—first, the news of the day, then some scientific work, of which there are many on different subjects, within the reach of the working man—would be a recreation of both body and mind. Too many mechanics choose for recreation, places of resort, where they not only throw their time away, but much of their money, and oftentimes their health.

The money and time thus lost, would purchase all the scientific works the mechanic would need, and at the same time his mind would be stored with useful knowledge. It is not to be supposed, that the mechanic is going to be able to vie with those who make learning their life's business; but we can take the advantages which are pre-

sented to us by those who have devoted their life to study, and have placed the fruits of their labor before the world. The mechanic can get the general principles of all the sciences, which would have a tendency to elevate him in the scale of society, by a little extra exertion in the way of economizing his leisure hours.

One dollar a month will, if rightly applied, purchase all the books and papers that the mechanic can profitably peruse and digest, and furnish a fund of information that would astonish a person who is not in the habit of reading. I will venture to say, that two-thirds of the mechanics of this country spend twice that sum in a way that is not only profitless, but positively injurious.

The mechanic will find a course of proper reading not only interesting and recreative, but he will find it a money-making business. The well-read mechanic will always command at least one-third higher wages than those who do not read, unless to peruse some 'love sick' romance, filled with disgusting nonsense. I never heard of an *inventor* who was not well read in the general principles of the sciences. I think such a one would be a great anomaly. The reading mechanic is much more observant of passing events, than the anti-reader. When something is read that is new to him, he takes the first opportunity to see if the book or paper told him true; and so he accumulates ideas, and many new ones (to him at least) may originate from his brain.

The free laboring mechanic is the steam engine of the world; then how necessary that all its parts be well fitted, so that the governor, Science, may have full control of the mighty structure. The mechanic may, and I believe yet will, take his place among the highest in society. He does not yet see what he may be, if he will only make the trial. Then arouse, brother mechanics! and commence a course of reading in the Arts and Sciences, and I will wager a volume of *The Inventor*, that you will not regret it. It will bring information to your mind, health to your body, and money to your pocket. It will give you a character among men, that will enable you to stand with the proudest of them. It will give you the power to converse readily on different topics which may come up before you when in company or elsewhere. Now is a good time to begin; the long evenings are close at hand. Get the right kind of books and journals, and I will warrant, you will find it to be a paying operation at the end of the year. HAMMER.

Hartford, Conn., Sept. 15th, 1856.

"TERRA CULTURE A HUMBUG."

So say some of our savans. Yet the facts are wanting in proof; and until these are forthcoming, we shall not waste ammunition, considering the game not worth the taking. One declares, after hearing the principles of Terra Culture explained, and those things claimed as secrets, disclosed, that 'he has heard nothing new.' Another says: 'he would not take five hundred dollars for the benefit received.' One dogmatically asserts before examination or experiment, 'that the course recommended is contrary to universal practice and common sense.' Another, 'that he has always pursued such a course with uniform success, and if that is Terra Culture, I have always followed it.'

This contrariety and diversity of view and expression, is by no means remarkable, in relation to any new doctrine or theory, especially if it come in conflict with long cherished doctrines and prejudices, and perhaps *pecuniary interests*. It shall be ours to examine this subject in relation to the facts presented, and give or withhold our sanction, in accordance therewith. 'Practice, with science,' shall be our motto. To search into the causes of things, as we walk abroad among the works of God, and with enlightened curiosity endeavor to find out nature's laws and operations, shall be our daily work.

We have ever been led to conclude that nature proceeds on fixed laws; that she is not one thing to-day, and another thing to-morrow. All the relations of the different parts of nature are mutual and exact, and every thing moves on in beautiful agreement and harmony. The ancients were accustomed to speak of the 'music of the spheres,' referring to the harmony which prevails throughout the universe—no discordant note being ever heard. There is a reason for every thing—a rule by which everything is directed and controlled. True, many things may be beyond our comprehension; yet, there is nothing which should be beyond our inquiry. All will admit that there is a wonder-working power in the vegetable kingdom. The development and progress of vegetable life, the relations of the soil to the plant produced, the effects of light and heat, of air and dew, of frost and electricity, of the nature of manures, their uses and

their results. The functions of the leaves, and roots, and stem, and tissues, with all the circumstances pertaining to their nature and complex structure, may be considered as involving many unsolved mysteries. Terra Culture claims to have taken a single step in this *Terra Incognita.*

In the maintenance of her claims, she is not wanting in reasons, and comes to us supported by an array of facts, that the skeptic and casuist must dispose of, before they can be consistent with themselves, or with sound philosophy.

In relation to practical agriculture, we are compelled to hesitate before we assert with confidence that the 'earth moves.' In mechanics, improvement is obvious. In commerce, it is striking; but any one who will take the pains to examine, will find that our agricultural journals are ringing changes from year to year, upon the same bells, leading us to the conclusion that dame Nature is a *fickle thing*, and not to be trusted. As we recently took occasion to record in regard to wheat, the same diversity exists in the culture of every important plant and vegetable. You will find the same in the cultivation of the potato; some recommend deep culture, even to the extent of six or eight inches, some shallow, some ridge, some level. Some for seed prefer the largest potatoes, others, large potatoes cut directly in half, others into pieces containing two or three eyes, while not a few prefer small potatoes; and we even find persons who have made the discovery, and assert with pertinacity that you may eat your potatoes, planting only the sprouts, or even the rind, with entire success. All alike substantiating their opinion by experience and well authenticated facts.

We are no less fortunate in regard to Terra Culture. A correspondent writes us that he has raised sixty pounds of potatoes, or one bushel, from six hills—that since he has adopted the system of cultivation which it recommends, he raises more than double the crops of his neighbors, and more than double what he formerly raised, and with less labor and expense! Another, that Terra Culture has proved invaluable to him in orchard management, and product; and it is a little remarkable, that among the large number that have been interrogated, not one has yet spoken of it disparagingly, in practice. And in our own brief experience in wheat, we will state, that after a period of six weeks, the Terra Cultured product from a single grain, weighed eight times as heavy as that cultivated acccording to LOUDON. On witnessing this display and disparity, 'wait, wait!'

says our objector, 'until the wheat is gathered.' This is proper advice, and we will patiently abide the result. We are now prepared to say that if the whole theory prove a cheat and a deception, it nevertheless takes us to such a stand-point of observation as will either to prove it true or false, necessarily lead to such close investigation and experiment, as must be attended with salutary results, and perhaps lead to valuable discoveries, for the observer will be under the necessity of investigating nature *closely* and *systematically*.

Now, until something more substantial than bold denunciation, and ill-timed wit and ridicule, are employed against this, or any other plausible theory or doctrine, we shall neither be moved to abandon our position, nor reply to our defamers. If subsequent experience and reliable statements substantiate as conclusively the claims of what is denominated 'Terra Culture,' as those already preferred in attestation of such claims, it will take something more than the cry of humbug to frighten us into silence, or deter us from its practice. Let the old fogy continue to plant his potatoes in the moon, when the sign is in the foot, and he who would decry science, resort to his Delphic oracle, the press, where he can find the response that best suits him; we shall endeavor to conform our practice—after taking into view the nature of seed, plant, or tuber—to the obvious laws regulating its germination, growth and maturity, which Terra Culture boldly claims to understand, and rigidly to follow.

For the Cincinnatus.

THE RELATION OF THE PHYSICAL NATURE OF THE SOIL TO ITS FERTILITY.

To a pious man of old the divine promise was given, that his seed should inherit a land where milk and honey flows, and at all times has a fruitful and fertile country been a safe guarantee to a nation's lasting welfare and prosperity. Fertility of the soil is the all important standard by which the farmer measures and selects the spot where his home is to be erected, and upon which his toils and energies are to be expended. Since the day when man first undertook to cultivate the earth, up to this enlightened present age, the intelligent tiller of the soil has again and again attempted to comprehend the manifold problems of his profession; but has he, with all the light

of science, and with all the practical experience of ages, arrived at a full and clear understanding of the causes which govern fertility and sterility of soil? Can he account with certainty for the hundred, the thirty, or the tenfold yield which his seed has produced? To this question we have to answer, that we know but in part, and prophesy but in part.

Chemistry, it is true, has of late taken a strong hold upon this important topic, and according to the results of the most minute analyses of the soil and the plant, her most talented sons have established theories, which, seeming quite natural and plausible, have for some time past filled the world with wonder and enthusiasm. Their theories accord fully with many facts, and ancient customs of the farmer, with many other not less important facts, however, that have so far not been made to square. The future development of science and practical experience only, will fully prove whether they are correct or false. It is not probable, nor reasonable to expect, that this important question can be satisfactorily settled by chemical analysis alone, as many most important facts depend on causes which necessarily escape the observation of the investigator. Many items of practical experience taken from the laboratory of the farmer—wherein the noble plow is the most beneficial apparatus—must be taken into consideration. It would indeed be unfair to suppose that the chemist has done all the thinking, leaving the despised labor to the farmer. On the other hand, however, it is to be acknowledged that agriculture has been greatly profited by the researches of the learned.

We can readily find a fact to serve as an average between the farmer's and the chemist's merits in the solution of the question. The farmer can increase the yield of a certain crop by a high and skillful preparation and cultivation of the soil. The chemist attains the same end by the application of a certain chemical, artificial manure, of modern days, which is said to be indispensable to the life and healthy condition of the plant. In the one case the physical nature of the soil is improved more than commonly, that is to say, a greater portion of the soil is made ready to receive the beneficial influences of the atmosphere, which introduces stores of vegetable nutrition. Many most important ingredients of the soil are thereby brought into direct action, which, previous to the mechanical process of breaking the subsoil, have slept in an inactive state under the earth. In the other case, a powerful stimulus is directly offered to the plant, which is eagerly devoured, without any reference to the

constituents of the soil, which lie buried under the shallow crust of cultivated earth. An inquiry into the causes of the fertility of the soil may appropriately be divided into a consideration of the chemical and the physical nature of the soil. Both roads in which the question is to be pursued run for a time in the same direction, joining hands at every step; there is a point, however, where they may be said to diverge, the one leading into the wide field of agricultural profession; the other into the darker labyrinths of chemical science, in which, high attainments, that but few possess, are required, to conduct investigation in so correct and minute a manner, as to render them beneficial and of any real value. Whether it is expedient that the agriculturist should rise to these higher regions of theoretical knowledge, I would refer to the wiser judgment of the philanthropist; he will, however, be highly profited by a clear and thorough understanding of the physical nature of the soil he is called to cultivate, and he will thereby learn the most profitable mode in which to employ his physical powers.

Carbonic acid, ammonia and water, obtained from the decomposition of animal matter, are held in immense stores, in the atmosphere, for the nourishment of the vegetable kingdom. All plants take up freely such quantities of these substances as are necessary to their subsistence and growth. The difference in their success in different soils and localities can not, therefore, be dependent on these organic nourishments, but it must be sought in the various mineral constituents of the soil. That mineral substances, dissolved in water, pass into the vegetable body, is clearly demonstrated by the fact, that various salts and alkalies are found in the ashes of the plant. This theory was first established by the ingenious chemist, JUSTUS LIEBIG, whose researches and discoveries have greatly revolutionized former principles of agricultural chemistry, securing a world-wide fame to their originator. We have the prophesy from another shrewd philosopher, that, in a future day, the aphorism of science will thus run: "The whole wealth and the whole manifoldness of terrestrial vegetation—its whole variety, as well when we compare zones of longitude and latitude, as wild nature with cultivated lands, are exclusively dependent on the variety of inorganic constituents which the plant takes up from the soil." Various objections present themselves to this theory, and much, undoubtedly, will be said for and against its value, before it is fully adopted or rejected by all parties, and it is to be hoped that some one, skilled in the mysteries

of chemistry, will take up this important topic for a liberal discussion in the pages of *The Cincinnatus*.

Fertility of the soil may depend as much on the peculiar form and relation in which the mineral constituents are found in it, as on their presence or absence. Many facts can be presented in proof of this assertion. A soil of the most genial composition may be utterly useless, and unfit for cultivation, as long as it retains such quantities of water as to exclude all action of the atmosphere from its interior. Let this soil be drained, and its coherent parts be loosened and broken up, and a new state of things will ensue. The air now penetrates into the interior to act upon the salts contained in it, its temperature will be elevated, and bountiful crops will testify what a mighty influence the physical nature of the soil commands over its fertility. In other soils, however, the necessity of minerals to insure fertility is strikingly demonstrated. Such soils often present the most favorable physical properties; yet a lack of necessary mineral constituents renders them unfit for cultivation. A free and liberal action of the atmosphere upon the soil is undoubtedly not less important and necessary to a successful course of vegetable economy, than the action of the mineral upon the plant.

A certain degree of porosity is indispensable to every soil, to fit it for successful cultivation. The atmosphere readily takes possession of the vacant spaces which exist between the atoms of the soil. Constant supplies of carbonic acid, ammonia and watery vapors are thus brought to the service and disposition of the plant; and those chemical transactions are made possible, which are necessary to prepare the mineral constituents to the direct use of the plant. Porosity is also indispensable, for another not less important reason. A porous and loose soil receives and maintains a much higher degree of temperature, becoming thereby more genial to the germination of the seed, and the development of the plant. Strikingly is the influence of the air upon the soil exhibited on many spots where the farmer's tools have never stirred the ground. What a luxuriant growth does that spot present whose soil is loose and open to atmospheric action; and how scantily and meagerly is mother earth covered in such places, where the surface soil is baked to a hard and impenetrable crust. In our so-called warm and cold soils, this difference is plainly illustrated; the one is loose and porous, the other compact and tenacious. To secure this important action of the atmosphere, to the benefit of the plant, the farmer unceasingly toils;

and a good farmer will spare no pains in plowing harrowing and hoeing, till his soil possess the most favorable physical nature. The porosity of the soil must, however, be duly balanced by a certain faculty of retaining a store of moisture, for a time when nature refuses her beneficial showers. Many plants of silicious and calcarious nature, are, owing to their peculiar composition, entirely devoid of this indispensable property. There being no possible means of altering their physical nature, they must remain uncultivated. Their value for agricultural purposes depends, however, in some measure, on the climate. One soil may answer a moist climate, like that of Great Britain, and produce tolerable crops of various descriptions, whilst in the hot atmosphere of America, it would decidedly refuse its service. A more minute discussion of the various soils, and their fertility, will be found in a future number of *The Cincinnatus.*

CIN'TI HORTICULTURAL SOCIETY—PROCEEDINGS.

January 3rd, 1857.

This being the day for the annual election of officers, nominations were made, and the Society proceeded to elect. The officers of last year having declined re-election, the ballot was had, and resulted as follows: Pres., John A. Warder; 1st Vice Pres., Wm. Stoms, 2d, E. J. Hooper, 3d, Dr. Wm. Sturm; Rec. Sec'y, I. J. Allen; Cor. Sec'y, A. H. Ernst; Treas. E. Mills; Librarian, M. H. White; Council, Gabriel Sleath, Rob't Reily, S. W. Hazeltine, J. K. Greene, F. G. Cary, T. V. Petticolas, and J. W. Caldwell. Standing Committee on Fruit: R. Reily, A. A. Mullett, Wm. E. Mears, Wm. H. Pye, E. J. Hooper. On Flowers: J. P. Foote, S. S. Jackson, C. Patton, G. M. Kern, and J. Howarth. On Vegetables: W. R. Fee, D. J. Cassatt, F. Pentland, W. E. Mears, Geo. Selves.

After the election, notice was given of the next meeting, to be held in the Society's new Hall, Bacon's building, corner of Sixth and Walnut.

Mr. Hoffner exhibited the fruit of the cactus cereus Braziliencis. Mr. Lee exhibited an evergreen from Tenn., the *Eunonimous Japonica*, so-called, and a beautiful blue flower, the *Gentian Azurea.*

JANUARY 10.

The Society met for the first time in 'Horticultural Hall,' corner of Sixth and Walnut streets. President WARDER delivered an able and appropriate Inaugural Address, which was received by the Society with hearty applause. The Society by unanimous vote, expressed their thanks to the retiring officers of the past year, for the ability and fidelity with which their respective official duties had been performed.

The Report of the Library Committee was read and received, and several gentlemen voluntarily tendered liberal contributions of appropriate books to the Library. On motion of Mr. HEAVER, the Society "Resolved that the Librarian be instructed to consult with the Library Committee, with a view of adopting measures to perfect the incomplete volumes of periodicals in the library, and also to adopt measures to raise the number of books to the amount required to enable the Society to claim the bequests emanating from the Smithsonian Institute.

The following communication from J. W. WARD, Esq., was received and read by the President:

CINCINNATI, Jan., 1857.

PRES. OF HORTICULTURAL SOCIETY:

DEAR SIR:—I observe in the Report of last Saturday's proceedings, the following statement:

"Mr. JOHN LEE presented an Evergreen from Tennessee—the *Eunominous Japonica.*"

Setting aside the bad spelling, there is certainly an error in this statement. By Eunominous, is undoubtedly meant 'Euonymus,' a common shrub in American forests. The error is in the name of the species. I have seen the specimen, and think there can be no doubt of its being Euonymus Americanus, common in Kentucky and Tennessee woods. It closely resembles the E. Purpurea, so familiar in this neighborhood, and all through the Middle States. The Americanus also grows in this State and Indiana, where it is deciduous, becoming evergreen in more southern latitudes. The shrub, in both species, is one of our beautiful, and too long neglected native productions; some very fair specimens are to be seen in this city, especially an uncommonly large one of the pupurea species, in the garden of L. B. HARRISON, Esq., Fourth street.

Respectfully yours, J. W. WARD.

In relation to the State Fair for 1857, the Society unanimously adopted a resolution that if said Fair should be held in the vicinity of this city, the Society would heartily co-operate with, and aid the State Board of Agriculture, in preparing and arranging for the same.

New members: Prof. C. H. CLEAVELAND, GEO. S. STEARNS, J. BURGOYNE, W. GARRISON, W. BIRNEY, A. M. COOK, were elected to membership. Prof. CLEAVELAND introduced to the Society Dr. McCATTA, of the Island of Jamaica, who placed before the Society seeds of various flowering plants of the Tropics, speaking of their great beauty, and suggesting them to the attention of the Society for green-house cultivation. The Society tendered their thanks to Dr. McCATTA for his appropriate gift, and placed the seeds in the hands of the Council for suitable distribution. Quite a variety of apples in good condition was exhibited by various gentlemen. The Corresponding Sec'y was ordered to lay the action of the Society concerning the State Fair before the O. State Board of Agriculture.

JANUARY 17th.

Society met at Horticultural Hall. President WARDER in the chair.

Mr. BUCHANAN announced the death of Mons. F. A. MICHAUX, late a corresponding member of this Society in France, and distinguished in the scientific annals of Europe and America.

In view of the announcement, made by Mr. BUCHANAN, Mr. GRAHAM moved the appointment of a committee to take into consideration the subject of the demise of Mons. F. A. MICHAUX, and report suitable action for the Society thereon at the next meeting. The Chair appointed Messrs. BUCHANAN, GRAHAM and FOOTE, such committee.

Mr. STOMS moved the discharge of the Special Committee on the the 'Chinese Sugar-cane.' Mr. ERNST, to amend by requiring the committee to report in writing. After some discussion the motions were both tabled.

REPORT OF FRUIT COMMITTEE.

Mr. HOOPER, CHAIRMAN, reported that the specimens presented were:

Yellow Bellefleur—Fair specimens, a well-known and favorite fruit.

Tulpehocken—very fair and highly colored, probably from old trees; in good state of preservation; this variety, though not supe-

rior, is very profitable, and an early bearer, though a short-lived tree.

Rhode Island Greening—Fair and good, though not possessing the firm character of the variety as grown further north.

Esopus Spitzenberg—A highly-flavored variety, of rare excellence; but the remark as to latitude concerning the former, equally applies to this fruit.

Newtown Spitzenberg—Of fine quality, as this fruit generally is in all the region about us.

Newtown Pippin—Very fine specimens, well developed and of high flavor, as is generally the case in our fertile soil.

American Pippin, or Grindstone—Fair specimen of a very indifferent fruit, remarkable for its abundant bearing, late ripening, the firm hold of the stem to the twig, its withstanding frost before gathering and endurance of rough usage afterward, as well as for its being a long keeper, although very poor at all times.

Gilpin, or Romanite—This apple may be as roughly handled as the 'Grindstone,' and kept in the ground like potatoes. It seldom rots, and keeps late; prolific, and bears early; good for cider; profitable.

Unknown—A large, red, striped fruit, oblate, slightly conical, basin shallow, core rather large; flesh tender, yellowish, moderately juicy, rather pleasant, sub-acid, of peculiar flavor.

Unknown, small, red, striped conical, slender stem.

Unknown—Medium size, slightly conical, shallow basin or none, plaited about the eye, which is closed, skin very smooth, susceptible of a high polish, very dark red, with dark stripes; flesh very tender, white, stained red, melting, juicy, sub-acid, and of a peculiar spicy or fennel flavor.

Pawpaw—Medium, oblate conical, a regular, rather deep basin, eye closed, skin smooth, white, sometimes blushed; flesh white and exceedingly tender, juicy and very sweet.

White Winter Pearmain—Medium, conical, basin shallow, often plaited, stem short, skin smooth, greenish yellow when ripe, blushed when exposed; flesh firm, breaking juicy, pleasant, lively, sub-acid; seeds of a peculiarly light brown color, in a moderate cavity. This very prolific variety is a good keeper and highly valuable. How could it ever have been confounded with Michael Henry so long?

Winter Sweet Paradise—A rich, sweet apple, of good, sprightly, but not high flavor; light in weight; a very productive and excellent orchard fruit, and of fine appearance.

Black Apple—Flesh, white (sometimes stained with red to the core;) crisp, juicy; of agreeable, sharp, sub-acid flavor; rather poor in character.

Delight—beautiful and very fair apple, cultivated by Mr. McCORMICK for thirty-five years; but little known; of great tenderness, pleasant and juicy, in its season—winter.

Mr. STOMS moved to discharge the committee on Mr. LONGWORTH'S communication concerning the Peabody Strawberry.' Carried.

Mr. GREEN moved that a meeting of the Chairman of the Committees on the Premium List with the Council, be held as soon as practicable; and that the matter of holding a spring exhibition be submitted at such meeting for report. Carried.

On motion, the resignation of Mr. PENTLAND was accepted.

The order of the day, being an essay, by Vice President, Dr. STURM, was announced; and Dr. S. proceeded to deliver an able and eloquent address, for which the Society tendered their thanks by unanimous vote.

New Members—Professor A. WOOD, F. W. SLACK, W. C. SWIFT, S. T. CARLY, C. DAVENPORT and Professor W. W. DAWSON, were elected to membership; and, on recommendation of the Council, Dr. McCATTA, of Jamaica, was elected as a corresponding member.

Flower Basket and Boquet—The President's table was graced by a most beautiful and delightfully fragrant flower basket and boquet, with a card modestly nestling among the flowers, signifying that the lovely gift was from 'an old friend,' and the President signified that therefrom came a whisper of the name of ANTHONY PHIFER.

The meeting was numerously attended, and the utmost harmony prevailed. I. J. ALLEN, *Secretary.*

CAST IRON CHIMNEY CAPS.—A correspondent of *The Country Gentleman* inquires if cast iron chimney caps will attract lightning. They *will not*—because they form no continuous conducting current. They will not have any more influence than a metalic roof, (which has none at all) and not nearly so much as the soot inside the chimney, which is a good conductor, and extending all the way down, is a prominent reason why chimneys are so often struck by lightning. A good lightning rod, high and sharp above, and deep in the earth below, will protect from danger in all cases.

THE MANUFACTURE OF PAPER.

THE inventions and researches of GUETTARD and SCHAEFFER have been the foundation of the more recent and important improvements in the production of paper. In the year 1781, SCHAEFFER published a book containing fifty or sixty different specimens of paper, the result of his own experiments. A copy of this book is in the library of the Smithsonian Institution, and from an examination of its contents, the specimens appear to have been of much value, and were no doubt the product of hard study and investigation. These specimens of paper are made from all the well-known substances of that time which were subject to experiment, and comprise the various kinds of barks and leaves of trees, the pith of the thistle, mosses, vines, and grasses, and nearly everything possessing fibrous and textile properties, and which seemed a suitable subject from which to produce a paper pulp.

In the year 1784, an important addition was made in paper making, by the discovery of chlorine of schule, a substance, as it is well known, possessing great bleaching properties. This gas possessed the power of totally destroying all vegetable colors, and, with lime, it was extensively used for this purpose.

In 1787, a Mr. GREAVES obtained a patent in England for producing paper from the leaves and bark of willow twigs and from various plants; but this invention did not prove to be superior to SCHAEFFER's experiments and improvements; and about this time the works of a French author were printed in London on paper made from the marsh mallow, and also specimens made of the willow, reed, nettles, hops, lime, elm and oak, and of the burdock and thistle. It will be seen that this invention was eclipsed by those more important, and of anterior and similar date.

Several inventions in paper-making were made in England prior to the year 1800, but a few only are deserving of notice. During the year 1787, SAMUEL HOOPER obtained a patent for an invention of paper for printing, which was adopted by the paper manufacturers; and on the 20th of January, 1790, he was granted another patent for producing it from leather cuttings. These cuttings are the refuse material in the manufacture of leather, and are considered

useless. He employed these and the worn out leather tops of carriages, and all the scraps which had been used for other purposes. The cuttings were cleansed from all impurities, pulverized in a paper engine, and were formed into paper by the usual mode. It is alleged that a good quality of paper was produced, and, by varying the quantities and coloring, it presented an article of the desired hue. But the paper thus made was intended for wrapping or packing paper—an object for which it was specially suited.

A Mr. CAMPBELL obtained a patent in England in 1790 for a process of bleaching paper materials. It was used, but not extensively, by the manufacturers. It was a combination of acids, and was expensive—the latter feature causing its condemnation.

In Italy, it is stated, that the straws of the hemp afforded a paper equal to the finest manufactured in Holland; and FONDI, an Italian author, claimed to be the first inventor for producing it from this substance; but he was anticipated by SCHAEFFER. The year 1800 is noted for the production of several books, the paper of which was manufactured from straw, and which referred to the progress of paper-making among the ancients.

In the same year (1800,) MATTHIAS KOOPS, in England, invented a process for the refabrication of written and printed paper; and in the year 1801, he discovered a method of extracting inks from paper. He also obtained a patent for manufacturing paper from wood, straw, hay, hemp, flax, thistles, and other vegetables. He printed a book on these fabrics, which contains much information relative thereto, and with the exception of SCHAEFFER'S collection in his book, is the most complete and perfect. He is alleged to have been the first person to produce useful paper from straw; and notwithstanding the repeated failures prior to his discoveries, he asserted that paper could be made from any vegetable substance. In extracting ink from paper, he used caustic alkali, prepared of lime and potash. After discharging the ink, he bleached the pulp by means of the oxygenated marine acid; it was then manufactured by the usual method.

In the year 1799, a Dr. WILLICK experimented with raw vegetable materials, in company with a celebrated paper-maker of London, and they claimed priority of invention over the patents above described, and stated that the inventions of that time, which were alalleged to have been made, were surreptitiously obtained. Much dispute ensued, and no one was awarded the honor.

METEOROLOGICAL TABLE.

Observations made at Farmers' College, College Hill, Hamilton County, Ohio, Latitude 39° 19′, *W. Lon.* 7° 24′ 45″ *for the month of December,* 1856, *by Prof. R. S. Bosworth. Hight of Station above the Sea,* 800 *feet.*

	Barometer. Corrected for Temperature & Capillarity.				Open Air Thermometer.				Clouds—Course & Velocity.						Wind—Direction & Force.			Rain & Melted Snow.		
	7 A. M	2 P. M	9 P. M	Mean.	7 A. M	2 P. M	9 P. M	Mean.	7 A. M.		2 P. M.		9 P. M.		7. A. M.	2 P. M.	9 P. M.	Hour Began.	Hour Ended.	Am't Inch.
1	29.111	29.057	29.007	29.058	34.0	50.0	46.0	43.3	3	S.W. 2	10	S.W. 1	10		S. ½	S. 1	0			
2	28.781	28.507	28.259	28.849	44.0	46.3	58.5	49.6	10	E. 10	10	E. 6	10	S. 3	E. 3	E. 2	S. 3	5 A. M.		
3	28.472	28.690	28.973	28.712	30.0	28.0	26.0	28.0	10	W. 8	10	W. 7	10	N.W.5	W. 5	W. 6	N. W. 4		in night	1.160
4	29.139	29.153	29.236	29.176	17.8	31.5	24.5	24.6	0	0	0	0	0	0	W. 1	N. W. 1	0			
5	29.346	29.299	29.342	29.329	15.5	30.0	20.5	22.0	0	0	2	S.W. 5	0	0	0	0	0			
6	29.406	29.355	29.357	29.372	10.0	23.7	16.0	19.0	0	0	0	0	0	0	N. 1	N. 1	0			
7	29.324	29.277	29.304	29.302	11.5	28.0	19.0	19.5	3	Cirri,	2	N.W.2	0	0		N. W. 1	0			
8	29.372	29.329	29.343	29.348	23.0	32.0	17.0	24.0	5	S.W. 1	9	S.W. 2	0	0	S. 1	S. 1	0			
9	29.402	29.341	29.351	29.315	16.0	35.0	28.5	26.5	0	0	4	Cirri.			0	S. E. 2	0	6 P. M.		
10	29.265	29.050	28.813	29.043	28.0	47.0	37.0	37.3	2		10		10		S. E. 1	S. 2	S. 2		6 A. M.	0.960
11	28.534	28.805	28.950	28.763	43.0	41.0	35.0	39.7	10	W. 10	2	W. 10	2	W. 4	W. 7	W. 5	W. 1			
12	29.070	29.065	29.269	29.135	39.0	45.0	33.0	39.0	0	0	0	0	0	0	S. 1	S. W. 3	0	4 P. M.	in night	0.450
13	29.254	29.016	28.644	28.978	33.5	40.5	41.0	38.3	2	E. 1	10		10		E. 1	S. E. 1	S. W. 1			
14	28.302	28.666	28.929	28.632	34.0	26.7	22.0	27.6	10	W. 10	10	N.W.8	1	N.W.5	W. 8	W. 6	N. W. 3			
15	29.083	29.093	29.141	29.106	15.0	26.0	17.0	19.3	2	0	10	0	0	0	W. 1	0	0			
16	29.117	29.193	29.349	29.220	16.5	24.5	19.5	20.2	10	0	10	W.	10	W.	0	N. W. 2	W. 1			
17	29.470	29.405	29.472	29.449	16.0	25.0	19.0	20.0	10	0			0	0	0	N. 2	N. 2			
18	29.547	29.423	29.350	29.440	18.0	29.0	22.0	23.0	2	W. 4	2	0	0	0	N. E. 1	S. E. 1	E. 2			
19	29.195	29.000	28.825	29.007	30.5	50.0	50.0	43.5	10		4		10	S. W	S. E. 2	S. E. 3	S. W. 5	9 A. M.		
20	28.958	29.116	29.309	29.128	29.0	19.0	7.5	18.5	10	N.W.4	2	N.W.6	0	0	N. W. 4	N. W. 3	N. W. 2		8 A. M.	0.600
21	29.301	29.214	29.103	29.206	0.0	18.5	10.0	9.5	0	0	3	Cirri.			0	E. 1				
22	29.082	29.194	29.297	29.191	−1.5	3.0	−4.0	−0.8	0	0	2	N.W.5	0	0	N. W. 5	N. W. 3	N. W. 2	N. W. 5	N. W. 3	NW2

23	29.360	29.312	29.279	29.317	-6.0	13.8	8.0	5.2	3		2	Cirri.	2		0	N. W. 2	0			
24	29.192	29.065	29.065	29.107	10.0	26.0	14.0	16.6	10	N. W.	3		0	0	0	0	0			
25	29.074	29.050	29.111	29.078	13.0	27.0	18.0	19.3	4	W. 1	0	0	0	0	0	0	0			
26	29.127	29.140	29.060	29.109	22.0	33.5	31.0	28.8	10	0	10		10	0	E. 2	E. 2	S. E. 1			
27	29.111	28.988	28.875	28.991	32.0	37.0	43.0	37.3	10		10	mist	10	mist	S. E. 1	S. E. 1	S. 1	8 A. M.	in night	0.310
28	28.920	28.980	29.058	28.986	38.0	40.0	33.0	37.0	0	0	0	0			S. W. 1	S. 2	S. W. 1			
29	29.104	29.085	29.110	29.100	24.0	40.5	37.0	33.8	2	Cirri.	0	0	10	W.	0	0	N. W. 1			
30	29.131	29.174	29.247	29.184	28.5	30.0	22.0	26.8	1	0	0	0	0	0	N. 1	N. W. 2	N. W. 1			
31	29.286	59.173	29.180	29.213	17.6	24.0	20.0	20.5	5	0	10		10		E. 1	S. E. 1	N. W. 1	3 P. M.	9 P. M.	0.100
Sums.				902.894				817.8												3.580
Means.				29.125				26.4												

REMARKS ON WEATHER.

2. Ther. 63° at 6 P. M. some thunder at same hour.
3. Blew with great violence last night. Snow squalls this day.
16. Ground just whitened with snow.
20. Some more snow this morn.
26. A few drops of rain at 11 A. M.
29. Clouded from S. W. at 2½ P. M.
31. Snow 1 inch deep this P. M.

EXPLANATION.—The state of the sky is indicated in this table by numbers from 0 to 10; 0 signifies perfectly clear sky, 10 that it is entirely covered with clouds, and intermediate numbers show the number of tenths clouded. The direction from which the wind blows is shown in the initials of the points of the compass. Its force is indicated by numbers; 0 meaning a perfect calm, and 10 the most violent hurricane.

MONTHLY EXTREMES.

	MAXIMA.				MINIMA.			
	7 A. M.	2 P. M.	9 P. M.	Month.	7 A. M.	2 P. M.	9 P. M.	Month.
Barometer, . . .	18th. 29.547	18th. 29.423	29.472	29.547	14th. 28.302	2nd. 28.507	2nd. 28.259	28.259
Thermometer, . .	2nd. 44.0	1st.. 19th. 50.0	2nd. 58.0	63.0	23d. -6.0	22nd. 3.0	22nd. -4.0	-6

METEOROLOGICAL SUMMARY FOR THE YEAR 1856.

THE whole amount of rain at this station during the year was 21.043 inches, not half our usual quantity. The wettest month was Dec., 3.580 inches; the dryest, July; only .325 of an inch. Mar. and Aug. were also unusually dry. The average temperature was 51.3, a little less than the usual mean annual temperature, which is 53.0 Jan. was remarkably cold, averaging only 17.5. The warmest month, July: temperature 80.9. The coldest day in the year, Jan. 9th, mean temperature, 11.9 below zero, while in the morning of that day the thermometer stood at 21.7 below.

The hottest day was July 17th, average 90.3 while on the preceding day, at 2 P. M., the thermometer stood at its highest point during the year, viz: 98.5. Notwithstanding the unusual cold of Jan., Feb., Mar. and Dec. the mean annual temperature was not as low as some former years; in 1831, for example, the average was 43.0

All the full grown peach trees were killed by the cold; also most of the cherries and other fruits; so we had no cherries nor peaches, and but few apples. Many grape vines were also destroyed, but still the yield was good. Wheat crop good. Potatoes planted early did not do anything, while a good yield was obtained in many places from those planted late. Hay was very light. Corn half a crop.

LABORATORY AT POLYTECHNIC HALL, OF FARMERS' COLLEGE.

HAVING completed one of the finest buildings for laboratories, in the Union, situated in the midst of our Botanic Garden, with all the apparatus and conveniences for the study of operative and analytic chemistry, we are now ready to receive students in this department.

Terms made known on application to Prof. R. S. BOSWORTH, at Polytechnic Hall.

Analysis of soils and minerals attended to on reasonable terms.

THE CINCINNATUS.

VOL. II. MARCH 1, 1857. NO. 3.

THE ROOT.

THE order, harmony, and design, which pervade nature in every part, must be obvious to every observer. Not only are these characteristic traits visible in aggregate masses, in respect to their forms, adaptations and ends, but they are equally conspicuous in a survey of their parts—the more minute analysis of their forms, atoms, and chemical combinations.

In our last number, we briefly noticed the seed in some of its more interesting characteristics—its process of germination and development. We now propose, with like brevity, to notice the physiology of the root; its varied forms and functions, its sources of nourishment, etc.

Diversity and uniformity seem strangely blended, and side by side appear, throughout nature's wide domain, imparting a luster, and interest and beauty, to every object. To attempt to portray these characteristics, would be vain; fully to appreciate them, we must experience their charms. To trace the living plant from the time it springs from the seed, until it yields its fruit, and to witness the marks of system and design in the various stages of its progress, can not be without interest to every reflecting mind.

Botanists have enumerated two distinct modifications of structure in the seeds of the higher forms of plants. In a pea or bean, the bulk of the seed consists of two large bodies in close contact, called seed lobes, or seed leaves—technically, *cotyledons*. When two of these are present, the plant is dicotyledonous; when but one, monocotyledonous—to the latter belong our grains. Wrapped within these organs, are the rudiments of the future plant. There is a manifest difference in the germination of these different kinds of seeds; but in both alike we discover a general tendency of one part

to fix itself in the soil, and the other to ascend into the air ; one, to seek the light—and of course the elements therein furnished; the other, darkness, and the elements contained in the soil. The living embryo starting in germination from a common point, it proceeds in growth—throughout its development—in two opposite directions. And thus far, amid the numerous curious and interesting speculations, as to the cause of this phenomenon, no better reason can be assigned, than that Gód so ordained. The descending axis is denominated the root, and the ascending, the stem. And whatever may be the position given to the plant, whether plunged deep into the earth, or placed near the surface, this axillary point from which emanate the vital forces, remains unalterably fixed; so that mere position, in reference to soil, is no test of the nature and name of the part of the plant, whether it be root or stem. And no variation of position, can by any manner of means, change the character of either. Men may speculate and theorize as they please, the stem and the root are distinct in their form, character, functions and growth. But of the root we are more especially to speak.

Roots perform the twofold office of supports or stays, enabling the whole vegetable organism to resist the action of such physical agents as the wind, and to supply fluids for the nourishment, maturation, growth and fructification of the plant, after having carried them upward to the atmosphere and sunlight to be elaborated by the leaves. One of the most marked characteristics of the root, is, that it does not turn green in its external tissues, upon being exposed to the action of light and air, whereas the various parts of the ascending axis do.

It is nevertheless true, that, although the branch or plumule can not become a root, nor the root a branch, yet the former may develop roots, and the latter buds and leaves, and consequently branches; and upon this property of stem and root, is founded the practice now so much resorted to, of propagating by slips and layers—the utility and wisdom of which, is very questionable. We are fully aware with what facility the willow, poplar, and Angier-quince, may thus be propagated by layers, and how nature accommodates herself to circumstances, yet to say such course is advisable, and most worthy our confidence, we apprehend a few more years' experience in dwarf pear culture, and infinitesimal root grafting, will abundantly attest. The assertion was recently made before the Cincinnati Horticultural Society—exciting the surprise, and staggering

the credulity of its members—that a tree would grow by being planted with the top downward in the ground, and the roots upward, and good authorities cited in proof. Although this is doing violence to nature's more obvious laws, the phenomena here presented, can be accounted for, on the same general principle with the practice already spoken of, of making branches develop roots, and—vice versa—roots develop branches—so common among nurserymen. The only difference is, they choose to take a single branch or root, and not the whole tree; and he who can give the rationale of the development and growth of the one, under such circumstances, can also, without any great violence to his logic, do it of the other. He who will assert, however, that the roots *become branches*, or the *branches roots*, knows not of what he affirms, and if he intends to convey such an idea, it is erroneous. Leaves can not be changed into roots, nor roots into leaves; but when a tree or its branches, are thus placed top foremost into the earth, the buds containing the rudimentary plants, situated in the axilla of the leaves, true to their own nature—containing, as they do, an undeveloped tree in all its parts—send downward the roots, their plumules remaining dormant; while the dormant adventitious or abnormal buds of the roots, exposed, as they are, to such influences as are suited to the development of buds, develop and expand them into leaves and branches. We can here conceive how such a monstrosity—with its inversion of sap vessels and all—may vegetate. But unless the system of root grafting and layering shall become vastly more popular than at present—which is only an approximation to this remarkable transformation of nature's plan of doing things—we feel assured that the practice of inverting her order, by planting the top downward, and the roots upward, will not become prevalent. True, as Mr. LONGWORTH often quaintly says, 'in these days of spirit rappings, stranger things than this may be expected.'

The forms of roots vary greatly with the manner in which the inferior axis descends, and divides into branches. When this central inferior axis is not impeded or removed, it tapers gradually, throwing out its laterals, and these again their fibrous lines, forming what is called the *tap root*. Thus, the various roots of a tree continue to lengthen as the tree continues to grow, forming as they extend, additional cellular tissues at their extremities, possessing the power of absorbing, if not selecting, the matter presented to them; in other words the food best suited to their wants. And when

that food is not at hand, they are often found elongating themselves into crevices and fertile places, in an extraordinary manner, in search of it. The modern theory for explaining the reasonableness and necessity of a rotation of crops, is on the principle that plants exhaust the soil of certain substances, and excrete others; and that what is taken in by one class of plants, is not demanded in the same proportion by others, and in this way, by proper rotation, the fertility of the soil can be preserved, if not improved.

The fluids thus taken up by the spongioles, holding in solution the various ingredients adapted to the plant, has been compared to the circulation of the blood in animals, as it is by this means nourishment is supplied to the plant. The fluids thus entering the roots by innumerable little mouths, rise upward, filling the cells, and being borne onward to the leaves—answering to the lungs of the animal—an elaboration takes place, thus supplying an excess of nourishment, causing new cells to be produced, and thus increasing the size, by widening and lengthening the cellular tissues. We shall have more to say of the circulatory motion of the fluids when we come to the stem and leaves, as it more appropriately belongs to the discussion of these parts. The practical cultivator can not give too much attention to the nature of roots. It is upon their proper treatment that his success principally depends. And yet many handle a tree as though these delicately formed and tender filaments of roots were of little value. Treating it as though it were a post or a handspike; simply realizing that one end is to be put into the ground, and concluding that if the weather is wet enough, when he sets it, and the season should continue wet, he would surely realize his fond wishes. On the contrary, he should regard his tree in taking it up, and handling it when up, and in replacing it in the locality intended, as a delicately formed, organized body, with important functions; indeed, further, a living body, to whose nature, in removing, he had done great vi[illegible] and produced a shock, which, with all his care, can rarely be [illegible] such favorable circumstances, as to renew [illegible] upon its own appropriate offices, and perform [illegible] more of the nature and [illegible] very carefully would we [illegible] and familiar opera- [illegible] the root, for instance, are so [illegible] ject to be broken off, dried, [illegible] must be mindful of the [illegible] hereto

Roots are of various forms, and differ, as to the length of their duration; as regards their shape, they may be arranged in four principal classes, namely: the tuberous, like the potato; the fibrous, formed of small threads, that spread at short distances into the soil, like those of wheat; the bulbous, resembling the onion in shape; and the tap rooted, the most of which are fusiform, such as the beet, carrot, parsnip, etc. From these four kinds, all other varieties may be said to diverge. In regard to duration, roots may be divided into two classes. Annual roots, those that perish after having borne seeds, as corn, carrots, beets, etc.; Perennial roots, those that live an indefinite number of years, as those of shrubs and trees. An annual plant may often be rendered perennial, by preventing its ripening its seeds, or transplanting it from a colder to a warmer, or more congenial climate.

On receiving a list of seeds, recently from Syria, there was among the kinds, our castor bean, which our contributor stated grew to be a tree in that country, a foot or more in diameter.

There is another interesting property of roots which we would here notice; the power they have in perforating the compact earth, insinuating themselves where we would hardly suppose the delicate fiber line could penetrate; thus, fibrous roots of wheat, have been traced to the depth of five feet, and the roots of trees over forty feet in depth. Of course this remarkable property is not without a purpose, and of this purpose there need be no guess work. On examination of some seedling apple trees, of last year's growth, the descending axis was found equal to the ascending, with a marked uniformity. And as a general principle, the roots of a tree will be found to correspond in size, and vigor, and extent, with the ascending axis and its appendages.

It is hardly necessary here to add, that those plants that are cultivated for their roots are of vast utility, not only as food for man, but forage for animals. The cultivation of the potato, the beet and the turnip, have been of incalculable advantage to earth's teeming millions, and more than once saved large portions of the human family from the horrors of famine. It is stated by Mr. Prince, of Flushing, Long Island, that China could not support her vast population for a single year without the product of that prolific esculent, which he is so zealous to add to our present number—the Diascorea Badatas. The American farmer is not sufficiently alive to the value of root crops, for forage, for food, and for the preservation and improvement of his soils.

In presenting to our readers our brief chapter on roots, we have endeavored to avoid technicalities, and to present those physiological points necessary to be observed in our daily operations connected therewith; we have omitted much that is curious, much that is interesting, our object being rather to excite attention to these subjects than to give learned disquisitions.

We are desirous of promoting scientific investigations among our agriculturists and horticulturists, in order that we may sooner or later emerge from the present twilight of speculation, and the guess work of imperfect theories and vaticinations, and enter into the more perfect sunlight of demonstration and experiment. We desire to see the time, in agricultural and horticultural science, when the present mixture of fact and speculation shall give place to a rigid system of induction, and when from numerous well selected and properly collated facts, after every phenomenon shall have been carefully weighed and measured there shall be evolved the pure unadulterated truth, that thus we may have solid ground upon which to stand, and with confidence take another step.

HOW TO PLANT A TREE.

To show in this connection what we mean by uniting theory and practice in agricultural science, we would append some directions for transplanting and setting a tree.

First remove your tree with care from the position where it has been grown, injuring as little as possible its roots. If it have a tap root, by no means cut it off, as some recommend; treat the fibrous roots with great attention; if to be removed to a distant point, they must be put in such condition that they be not bruised, or dried, or frosted; for with all your care they will be injured more or less. Before planting, prepare your ground properly. And here, what does this word, 'properly,' mean? Many such words in our vocabulary need explanation. First, the ground should be trenched, or subsoiled to the depth of sixteen inches, or two feet. Some say, dig a large deep hole. *Large*, *deep*. How large? how deep! says the practical cultivator. As large and deep as you please, says our instructor. JOHN, the laborer, finding the ground hard and rocky, is pleased not to dig it very deep. We want no such basins as will be formed on our compact clay subsoil if JOHN is faithful to *his* instructions, neither would we have compliance with that other direction, oft accompanying, to fill

up the holes with chip or stable manure, thus forming a loose soil extending to the wall of the basin, where the roots will be most effectually impeded by the hard clay.

If you can set but six trees in a year, do it right, remembering it is for a generation, not for a year's crop. After having prepared the ground as directed, dig a hole, not as before recommended, but—the ground being stirred at a sufficient uniform depth throughout—large enough to include all the roots—tap root, and all its appendages. And be sure you now do not set it *too deep*; and here we are led to inquire again *just how deep!* Without going here into minutiæ, we would say, set simply the *roots into the ground and no part of the top*. Or if you would prefer it, take the stereotyped phrase of the nurserymen, though certainly not very definite—'as deep as it was grown in the nursery;' or if not satisfied with this you may adopt the plan lately recommended by Col. WILDER, in the setting of dwarf pears—"set a young tree three or four inches below the place of the junction of graft, (fixing some point it is presumed not more than a foot from the ground) so that you may thereby encourage the roots to grow above the junction and thus greatly invigorate and improve the tree, having the benefit of two sets of roots, one set from the quince, and the other from the pear."

It is presumed that our readers will not regard us serious in repeating directions, so unphilosophical and unsound, however much we may respect the source from which they emanate.

Before setting, prepare a cask of what is called *puddle*, about the consistency of cream. 'Worse and worse,' says the hurried farmer, 'I have no time to attend to such nonsense.' Then I would simply say, take your own course; the business of nurserymen is to sell trees, and they will like you for a customer. Immerse the roots of your tree in this puddle that the mouths of the *spongioles* may be filled, and that they be not sent, after a long fast, supperless to bed. Ah, says the impatient farmer, 'I will take a wet time to set my trees, which will supersede the necessity of all this twaddle.' Not so fast, Mr. Farmer; you had better go and get a cart-load of loose dry earth, if to be found, than to cover the roots with the wet lumps you are about to throw upon them, which will soon be as dry as brickbats; this you see is the very opposite of your course, but I can not help it. After thus immersing the tree, and setting the spongioles to feeding, (and by the way let the first supper be a good one, out of good earth and a little good compost) be careful of the disposition of the roots;

do n't let them fall in a mass but properly separate them, filling in around them good mold, and do n't be afraid of using your hands; we want no baskets of chips, much less green stable manure, as is frequently recommended, but if any thing different from the natural soil, let it be earth well composted with decayed vegetable matter. After having thus brought the earth snugly to the roots, filling up all cracks and crevices, and leveling up the surface, your tree is properly set, *and will thrive.*

You may apply this process, not only to setting trees, but to every shrub and plant whose roots derive their nourishment from the soil, with equal success. You may thus set sweet potato or cabbage plants at mid day, when the sun shines brightly, without wilting—better then than after a shower. When quite dry, it may be well, after puddling your roots—which should be done as you take them from your hot-bed—upon setting your plants, to pour into the opening a half pint of water, drawing up the dry earth before the water is absorbed: this last should be done by a second person. This process will prevent what is called baking. The water rising by capillary attraction, moistens the earth at some distance around the plant, and it starts forward at once, not even wilting. In this way you will not lose a plant; you will gain from one to two weeks' time in growth, increase the strength of the plant, and do much to insure your crop.

ON USING LIME FOR COMPOST.

President F. G. Cary, College Hill:

Dear Sir:—I noticed in the last issue of *The Cincinnatus*, that a correspondent in Fredericktown, O., has made the inquiry: 'What is the benefit to be derived from mixing lime with compost heaps?' which inquiry you have properly answered in said issue. Allow me, however, to say that there is one feature in this, your answer, in which I differ a little from you, and in regard to which I will give you my views, hoping that they may be in time to prove beneficial to your correspondent.

The point in which we differ is this, that you are afraid of the ammonia—forming the most valuable part in stable manure—being driven off, and lost by the application of lime. My dear sir, there

is a simple remedy to prevent such an escape of the ammonia, by means of throwing a layer of ground—about three inches thick is sufficient—on the lime after the manure has been covered with it to the thickness of only one-fourth of an inch. The manure should by no means be old, rotten, or already decomposed, but should be taken fresh from the stable, and the layer of such manure put on the compost heap, should be of about the same thickness as the layer of ground, say three inches. The ammonia, made volatile by the application of lime and subsequent fermentation, is then taken up by the layer of ground and united with it so as to make the compost what it intended to be, to wit: a manure in which all the different particles of solid and volatile nutriments are collected—none lost.

The great benefit in making compost by the aid of lime consists, then, in the fact, that the process of decomposition is finished in a few weeks, after which time you have a compost—made from fresh stable manure—ready for use, which would otherwise—if the decomposition had been left in the usual way to the atmospheric influences—have required the time of a whole season.

The subject of using lime for agricultural purposes being quite interesting, I send you a most explicit article from the pen of DARIUS LAPHAM, Esq., 'On the Application of Lime on Soils,' to be inserted in the present issue of *The Cincinnatus*, and within a short time I shall send you a thorough description of my own modes of using lime to make rich composts from fresh stable manure, and from green vegetable matters, to be published in the next issue.

Yours very respectfully,

CHAS. A. SCHUMAN.

Cincinnati, March 1st, 1857.

EXTRACTS FROM AN ESSAY ON THE IMPORTANCE OF LIME IN SOILS.
BY DARIUS LAPHAM.

"CHEMICAL analysis informs us that vegetable tissue, or woody fiber, consists of carbon, oxygen, hydrogen and nitrogen, together with earthy, saline, and metallic bases. Plants assimilate these various substances by means of their vascular organization. The leaves absorb from the atmosphere, oxygen, carbonic acid and water; and the roots extract from the soil, in a liquid or gaseous state, whatever may be contained beneath the surface of the earth, in a condition suitable to be absorbed; and thence by some unknown process of vitality, the substances are assimilated and distributed throughout the plant, and

form, by successive accumulations, a new vegetable structure. In addition to the proper *food* of plants, the different species of the vegetable kingdom require various inorganic substances for their full and perfect development. The silica found in the stems of the cereal and gramineous plants, and the phosphate and carbonate of lime, which is essential to the perfection of all kinds of grain, are familiar examples. Soils, therefore, must be capable of supplying to the roots of plants, not only the substances which afford their proper food, but likewise the several inorganic substances which the particular species of plants under cultivation may require; and it is not only necessary that the soil should contain in itself all the substances which may be required for the production of any given vegetable, but these substances must be present and exist in such a state, that they may be capable of being absorbed and assimilated by the roots of plants; for instance, silica may be abundant in the soil, but unless some alkali be present to dissolve it, it can not be absorbed or assimilated by the plants. So also with humus; if it be in an insoluble state, the plants can not absorb it, and appropriate its component parts to the formation of a new plant; but so soon as air, moisture, or an alkali comes in contact with the humus, it is rapidly dissolved and assumes a form in which the roots are enabled to absorb and appropriate it. So it is with other substances; manure can not be absorbed by plants in its gross state; it requires to undergo a certain degree of fermentation and putrefaction before its constituents can be taken up by plants; and even then, it may be so combined with acids or other substances, as to be thereby rendered incapable of affording nourishment to plants until lime or some other alkaline substance has been applied to neutralize the acids, or change the character of the substances, so as to make them soluble, and convert them into a state proper to be absorbed by the roots of plants.

We are indebted to the Noachian deluge for a great many blessings, besides the ostensible one recorded in scripture, of purifying the world from its iniquities of mankind. To the powerful effects of this mighty rush of waters, [illegible] hiefly indebted for the pulverization of the various rock form[illegible] heir transportation and distribution over the [illegible] obe, forming those soils which [illegible] geologi[illegible] this deluge we are indebted [illegible] various kinds of [illegible] humus throughout [illegible] the earth

"Calcareous earth may be applied advantageously to soils in three different forms:

1st. In the form of *calcined lime*, either slaked or unslaked.

2d. In the form of *carbonate of lime*, either powdered limestone or shell marl, or marly clay, or in any other form in which it can be procured and incorporated with the soil.

3d. In the form of *sulphate of lime*, or gypsum—plaster of Paris.

Dr. DANA and Prof. HITCHCOCK recommend the use of lime on soils, and state that its action is threefold, each distinct. 1st. It is a *neutralizer*. Lime, either in its calcined state, or in the form of a carbonate, will combine with any acids that may exist in a soil in a free state. If the carbonate of lime is employed, the carbonic acid which it contained is set free, and becomes food for plants. 2d. It is a *decomposer*. Many of the metallic oxides will be decomposed by lime, and their components will form new combinations, or be absorbed by plants. But according to Dr. DANA's views of geine, the soil may contain abundant geates; that is, geic acid will combine with the earths and metals and form salts, not easily soluble, but which lime will decompose and render soluble. 3d. It is a *converter*. 'The great use of lime is as a *converter*, turning solid insoluble geine, nay, I go farther, '*solid vegetable fiber into soluble vegetable food*.'"

THE RUINS OF THE TOWER OF BABEL DISCOVERED.

THE *Boston Traveler* contains a communication from a correspondent in the East, who gives most interesting statements in relation to the discovery of ruins and monuments about Babylon and Nineveh. And if those statements be reliable, then it seems indeed as though those ruins were produced 'as witnesses from the dead,' just to convince skeptics and unbelievers of the great truth of Divine Revelation. The *Traveler* says that the official position of its correspondent is such as to give him unusual facilities for gaining information, and that his personal character is such as to be a full guarantee for the accuracy of his statements. We give the communication below:

DERIUT, December 8th, 1856.

It is nearly two years since, that I informed your readers of the grand and instructive discoveries in ancient Nineveh, made by Mr.

PLACE, the French Consul, in Mosul. Following up the researches of Mr. BOTTA and Mr. LAYARD, he brought to light monuments of that long entombed city, which equally amazed and delighted the world. A man of genius and enthusiasm, he was encouraged by his successes to extend his researches, which he now closes with an achievement, which, if his opinions shall be verified, will add imperishable luster to his name. The Tower of Babel was supposed to exist only as a Biblical souvenir—a thing of memory and not of substance. And, indeed, to many who contemplate it only in its audacity and folly, it seems a myth or a fancy only of oriental imaginativeness or superstition. Besides, no locality was assigned to the structure, except the great plain of Shinar, and no *debris* or ruins remained as the proof of its veritable reality.

How surprising, then, its discovery, if discovery it shall prove—that Titanic structure, whose base was laid in the earth yet soaked with the waters of the flood, and whose summit was designed to pierce the very heavens! And why not discovered? Nineveh has yielded up its secrets after a burial of long centuries. Babylon, once the glory of the Chaldean's excellency, has opened her gates again, if not to her Persian besiegers, at least to the living generation of all races, and in her cylinder-books offers her history to the world's inspection. What remains for discovery in the wreck and ruin of the old world, but Babel, that mighty tower which was designed to pierce the skies, and defy a second deluge! If it seems too much for belief, what should be thought incredible, when Nineveh and Babylon are brought back to the land of the living by a sort of resurrection, and their monuments of art are traveling through the nations to amaze and delight mankind?

Besides, there is a providence to be traced in these discoveries. They serve not only to amaze but to instruct; they not only gratify the curiosity, but establish beyond all doubt and controversy, the veracity and inspiration of the Sacred Records. The light of pure Christianity [illegible] upon the early seats of the human race; [illegible] met by the remotest antiquity.

[illegible] which has just been circulated [illegible] Babel, I will give, in a [illegible] at the same time [illegible] irut, Mr. LESSEPS, [illegible] found in the tower, [illegible] my hand, if not

my heart, will fairly tremble, if once it takes hold of the shovels, the trowels, and the hods used by those old masons and builders.

The village of Arbela, so famous in history for the decisive battle fought near it by DARIUS and ALEXANDER, is only a few days journey from Mosul, to which Mr. PLACE, wearied with the monotonous wonders of Nineveh, set off with his accustomed enthusiasm, in search of new discoveries, in a region celebrated in classical history. On his way, an incident occurred which proves to what a degree the statements of history, respecting the locality, are the simple truth. The escort of Mr. PLACE dismounted when they reached the field of Arbela, following the example of the Consul, who wished to *study* the battle field; and this he was obliged to do *standing*, as Turkish etiquette permits no one to remain seated in his saddle. Soon, however, he mounted again, in order to scour the plain, and the escort did the same, except a single Turk of enormous proportions, who followed on foot, puffing and bathed in sweat. Mr. PLACE pitying him for his sad plight, asked him if he did this because he *preferred* walking to riding.

" By no means," replied the Turk, " but I am unable to remount my horse, because I need the help of a stone in order to regain my stirrup, and who can find a stone in all the plain of Gingarnella? "

Now, it is well known that DARIUS employed 300,000 men for many days, in leveling this plain and breaking whatever would interpose an obstacle to his cavalry and chariots of war. In the center of the old battle field of Arbela rises a hill of collossal dimensions, whose object the party vainly conjectured, thinking it might be a tomb or a triumphal monument, or more likely both. Unfortunately they had not time to examine it, nor the appliances necessary for exploring it.

Passing on, Mr. PLACE and his party at length discovered what they believed to be nothing less than the veritable remains of the *Tower of Babel*—the wonder of wonders, and the grandest spectacle which the eyes of men can contemplate in this age of the world. This proud tower, which was built in defiance of Heaven, and aimed to pierce the very skies, has lost, in the course of ages, its cloud reaching elevation. Six of its eight stories have fallen and crumbled into dust; but the two which remain are so high that *they may be seen for fifty and sixty miles around.* The base of the tower is quadrangular, and each side about six hundred feet long. The tower is made of bricks of the purest clay, and of a white color, which is a

little shaded with a yellow tint. Under a clear sun, and as a whole, this ancient monument of human skill and daring, presents a fine blending of colors, which sets the painter's pallet at defiance. Before being baked, the bricks had been covered with characters traced with the accuracy of the hand of a writing-master. Near the top of the letters, the straight strokes were adorned with flourishes resembling the heads of nails. All was neat, regular and severe; and indeed those who saw these specimens of ancient calligraphy affirm that the fathers of the human race wrote a better hand than their children.

Another curious fact arrested the attention of the exploring party. The sacred record runs thus: "And it came to pass as they journeyed from the East that they found a plain in the valley of Shinar, and they dwelt there. And they said one to another—Go to, let us make bricks and burn them thoroughly; and they had brick for stone—or instead of stone—and slime had they for mortar." Modern skeptics may ask: "Where could these builders obtain all this bitumen?" for a vast quantity must have been demanded to meet the wants of so many trowels.' It is a singular coincidence that Mr. PLACE discovered a fountain, at a small distance from the Tower, whose waters flow in such abundance as almost to form a river. The stream would force its way into a river in the vicinity, did not the people hasten to stop it by setting the bituminous flood on fire, when they tranquilly wait till the fire is extinguished for want of aliment. Thus the old fountain still pours out inexhaustible quantities of bitumen, or slime, which supplied those old builders in their vast enterprise. Bitumen also adds to the durability of bricks, as well as firmly consolidates them in the masonry. Could anything be added to the marvel of the coincidences? Thus travels and expeditions in Assyria become Biblical corollaries, and new proofs are never wanting of old truths.

Among the interesting discoveries of Mr. PLACE, were certain inscriptions on fillets of gold, silver and copper, and also upon a metal now unknown, and which has somewhat the appearance of ivory. It has been submitted to the experiments of an intelligent metallurgist, and its qualities will soon be ascertained.

Some very curious photographs, taken by the expedition, completed their labors, one of which was of the ruins of the palace of the famous Queen, SEMIRAMIS. This ancient monument, situated on the hight of a mountain raised by the hands of men, overlooks the

awful solitudes which surround Lake Van—a body of water six or seven times larger than Lake Geneva.

It is not strange that a gentleman who had seen and handled some of the articles brought from the tower of Babel by Mr. PLACE, should be excited, as he was; he says: "In relation to archæological news, I take the liberty to inform you that I have just seen the *oldest* of the *old* world. Indeed, I do not know that I should be more surprised by seeing fragments of the ark itself. Fancy to yourself that I have just touched and held in my hand, and turned and turned again in every way *a little morceau of the Tower of Babel.* This trinklet of molded clay illustrated and baked by the sons of NOAH, has passed from the plain of Shinar to the chapel of St. MESMIN, and is the fruit of the strokes of the hammer in the hand of Mr. PLACE, our learned and enterprising Consul, to whom I am indebted for a sight of this precious relic, about which cluster so many grand souvenirs."

I will only add, that if your readers wish to obtain a distinct and accurate idea of the region referred to, in which lies the battle field of Arbela, and the plain of Shinar, they should open their atlas and survey the country between Mosul on the Tigris, and Lake Van, southeast of Mount Ararat. It was very natural that the sons of NOAH, descending from Ararat, should commence their agricultural labors in the fertile and well watered plain of Shinar, lying to the east, where, in the terrible remembrance of the flood, they vainly and impiously attempted a work which should protect them from the recurrence of the disaster. Recently, I met an English gentleman, Major FRAZER, who belonged to the staff of General WILLIAMS, the hero of Kars, who, with three or four other Englishmen, had gained the summit of mount Ararat—the first feat of the kind since the children of NOAH descended from it. Thus, by a singular coincidence, about the same time, the sacred summit was reached where the ark rested, and the tower discovered which was erected on the plain at its base.

CORRESPONDENCE.

PONTIAC, Livingston Co., Ill., Feb. 3rd, 1857.

F. G. CARY, ESQ.:

DEAR SIR:—It is many months since I have heard from you and your vicinity, and of the prosperity of the College, and the Model Farm, of which I suppose you are the chosen Professor in agricultural science. Suiting my address in accordance with my cogitations, I am seated at my desk, and writing an epistle to you, from my present home at Wolf Grove, five miles north of Pontiac, in Livingston County, Illinois. When in Ohio, I used to hear many things said of the 'sucker State,' of its beautiful prairies and pleasant groves; but never till I saw them did I fully appreciate the poetic phrase, 'The groves were God's first temples.' Here I feel the force of it; they are indeed temples, many of them standing out like islands in a great ocean. Pardon me, when I say Illinois will one day become the Banner State of this Union in Agriculture; we have here a soil of almost inexhaustible fertility, and neither roots, stumps or stones to remove. Farming is done on a much larger scale here than in Ohio, labor saving machinery being used to a much greater extent.

There is, indeed, a great want of Farmers' Colleges and model farms, like yours in the country. I long to see the day when such institutions shall proudly crown the summit of many of our beautiful prairie mounds, and send forth their dignified and educated farmers to till our fields, and make them teem and shine with the abundance of their fruits. Work on, then, in your great cause; send out the young men of merit and worth, fully educated for the task as missionaries in the agricultural world. It is the noblest calling among men. Of a truth, he who causes two blades of grass to grow where only one grew before, does more than he who conquers a nation.

I have many things to tell, but must defer for the present, my object being to give you my whereabouts, and let you know that your enterprise on College Hill is not forgotten. Here I am, far out in the prairies, in a beautiful section of country—healthy and fertile—building up a new prairie farm, that I intend, if possible, shall be a model for your Model Farm, on College Hill.

Will you be so kind as to write and inform me of your prosperity in the College and Farm. Yours truly,

JESSE PEARSON.

THE RAW MATERIAL.

CONTINUED FROM PAGE 62.

It appears mysterious that water should expand as it loses heat, that very power which ordinarily produces expansion. How can this apparent contradiction of the axiom—that the effect is in proportion to the cause—be explained? It is dependent on crystallization.

When heat is abstracted from water at any temperature, the atoms immediately approach each other. Heat and cohesion, are two antagonistic powers. If one is weakened, the other immediately gains force. If all the heat down to the neighborhood of the freezing point, is abstracted from water, the cohesion then becomes so strong as to tend to fix the atoms solidly in their places, and as they come near each other, certain ends or sides of the different particles, have stronger attractions for each other, than for any other portion, just as a number of magnets set about upon a dish of water, will arrange themselves after a certain form; the north pole of one will always attach itself to the south pole of another. This polarity of the atoms of water, arranges them in detached rows, or groups, with intervening vacant spaces, so that, although the individual atoms are nearer each other than they were before freezing, yet, in arranging themselves, they have left so many vacant spaces, that the bulk of the whole mass is increased. As each atom is infinitesimally small, like an infinitely sharpened wedge, there is scarce a limit to their power of expansion. By such a simple arrangement, even the dreaded frosts of winter, are most active in preparing fruitful soil for man. Thus does nature tune to harmony all the parts of her grand symphony.

Water is taken up in great quantities by the air, especially in warm weather. Millions of tuns daily leave the ocean, and, borne along by the viewless winds, until condensed by colder airs, fall upon the earth as rain, and as it flows back again through brooklet, creek and river, to its ocean home, it goes laden with the spoils of continents, which it spreads over the floor of the sea. Every shower that falls, transports the pulverulent and loosened soil, a part of its way on its journey to the ocean. The matter dashed from the hill side, in the muddy torrent formed by to-day's shower, may be

dropped in the first valley now, but the next shower that comes will take it up again, and carry it on another step in its seaward journey, until, in the lapse of ages, should water continue its action without any counteracting force, the whole land would disappear in the ocean depths, and the waves roll where now stand the 'cloud capped towers, and gorgeous palaces' of man.

The richer and finer the soils, the more violent the wash; and the industrious agriculturist, who sees his finest soil, which he has prepared with so much care, packing off towards the Gulf of Mexico, may console himself with the reflection, that in the lapse of ages, when the internal fire has elevated that portion above the sea again, it will make most excellent soil for somebody. As the benevolence of most people, however, does not extend so far into futurity, it becomes a matter of very great importance to know how to prevent their lands from slipping out from under them. It will take growing crops alone, longer than is generally supposed, to exhaust a soil. We may often look to the dashing rain as the thief which has stolen our land's fertility. As there is scarcely a field which lies perfectly level, the violent showers at least must have some effect upon it. An inclination of a fraction of an inch to the mile, will impart a perceptible motion to water. If it has a velocity of six inches per second, it will raise fine sand; eight inches, sand as coarse as linseed; twelve inches, fine gravel; and twenty-four inches per second, will roll along rounded gravel an inch in diameter. Fine mud will remain in water that has a very slight velocity, and may thus be carried an indefinite distance.

If we would prevent, then, the washing away of our soil, we should make the land—where it will admit of it—perfectly level, either by setting it off in steps; or if it is for hoed crops, let the rows be so directed as to follow truly a horizontal line. Preventing the wash will not be the only benefit of this practice. The summer rains will sink into the soil, instead of running off, as from a duck's back, and if the ground has been deeply plowed, it will furnish a store of moisture for the long drouths.

Hear what a careful observer—Col. H., of Cannon, of west Tennessee—says in regard to this matter:

"This system of Level Rows and Level Culture has been called mine. As a *theory* it is not mine. In theory, I know, it is not *new*, and, for aught I know, it may date away back to ancient Babylon. No claim of the kind, no paternity on my part, has ever been pre-

ferred by me. The only credit I could claim—were I claiming any—connected with this all important and vital question, might be, that to some extent, I have here performed the humble and unpretending part of a pioneer, in proving, not only its positive practicability and its easy accomplishment, but its most admirable adaptation and its *panaceanic* potency in curing the diseased condition and ministering to the gulliedly glaring wants of this particular section of country, at least. On my plantation it has stood the test of the severest ordeal; and having its great, incalculable and almost incredible advantages, in the shape of a satisfactory, individual experience, I willingly—though I fear very feebly—offer them to others; and do most earnestly urge upon all to run every row, every furrow—and were it practicable, I would say, every footpath, every mark made by a plow, in going to and from work, and every rut, regardless of their length—upon a *downright dead level.* In this connection, at least, I agree in and echo FALSTAFF's philosophy, that 'Eight yards of uneven ground is three score and ten miles with me.'

I have not now a gully, wash or break of any importance on any of my arable land; and wherever the smallest wash or break is seen at any time, upon the application of the level, it is invariably found to be consequent upon some fall in the rows—though sometimes so slight as to escape the eye, and so short as to be easily spanned at a single step.

In so earnestly engaging in the advocacy of this system of culture, I can assure you, no idle purpose of acquiring empty and ephemeral *eclat* actuates me. I have tried it, know of its many great advantages, and have proved it a positive protection against the most crying evil of the South—*the washing away of the soil;* and I do again urgently urge upon all to level your land. Do it by all means, and do it at once. Do it for your own sake, for the sake of your children, for posterity and the good of your country; and don't do it, as too often practiced, with a 'little fall.' No, no! not even with the *fraction* of an *inch* in a mile, or in twenty, should your rows be so long. Do this, and you may then discard your hill-side ditches, and save the space devoted to them, and the labor of making and keeping them open. Do this, and you wipe out the sickly hues from the face of your hill-sides, and get rid of those *ghastly gullies* which glare upon you at every turn, and like BANQUO's ghost, tell of murder. Do this, or stop scratching and scarring the bosom of your kind mother. * * * * *

Since adopting this system of level rows and culture, my manure is saved, and my hill-sides are actually becoming my best land—especially for wheat and clover. Another advantage, and no small one either: by this plan, you not only retain and return to the soil every *leaf*, *boll*, *blade*, *twig* and *stalk*, that falls or is put upon your land, and keep the soil from washing away, but you hold and reap the benefit of every hasty, and sometimes heavy, fall of rain in summer.

Your resolutions call upon me for the details—my *modus operandi*, etc. There is no hidden mystery, no magic about it. It is simple, plain and easily comprehended and accomplished, by any pains-taking man, even of the commonest capacity. All my land was leveled with an old fashioned rafter level—the mode of making and using which, I presume all understand. It takes but two pieces of timber —two for the legs and one for the cross piece—the length of the legs, hight of apex, and width of span to be determined by the operator himself. It should never be made heavy or unhandy to carry. Ten or twelve feet of span I think enough. Making the span short, insures more accuracy, the great *desideratum*. I would recommend the use of the 'spirit level' for the string and plumb, though all my work was done with the latter. I also recommend the spirit level for its greater accuracy, as well as its rapidity of execution. I have always had a plow to follow the level. You lose some time, it is true, with the 'hand and plow,' which might be saved by following with a smaller chop and the hoe and sticks to mark the row. But my polar star is still in the ascendant here, too. It prevents all mistakes, and thus may sometimes save time; but even if slower, it is more accurate and satisfactory.

Thus simply equipped, the unostentatious but careful and observing operator goes forth to the field—not as the conquering hero to the sound of martial music—not to lay waste and destroy, but to the sound of the soft matutinal hymn of sweet singing birds; as the good Samaritan, he goes forth to minister to the crying wants and heal the ghastly, gaping wounds inflicted on their kind old mother Earth, by her careless and uncalculating children. His mission is one of mercy, and no 'balm of Gilead' was ever more potent to heal and to save, than is the simple remedy he takes along with him in the shape of his plain and unpretending Level.

How many agricultural Samaritans have we among us? In this truly filial work who will refuse to engage?

I do not consider it of great importance at what point in a field you

commence, but when you do enter it, stop not at the threshold, loiter not at your hill-sides, leave nothing to chance, guess not at all, and trust nothing to the eye, but go all through, over and around it, and never leave the field, if possible, until the whole is leveled, and you know the work is accurately done. Do but this, and you may then go home and pillow your head in a happy and glorious certainty that your soil is secure, though the 'winds blow and the rains descend.'

The number of 'guide rows' I always make dependent upon the character of the lands, increasing them when the slope is abrupt and rugged, and diminishing them where it is more gentle and even. Once *well done*, it is a work for a *life-time;* and wherever it even approximates accuracy, the land is, to that extent, secure, and it is an easy matter, after the first rain, to detect any departure from it, and to remedy any defect—and defects there must be, at first, unless *every row* was seen with the level.

DIFFERENT SALTNESS OF DIFFERENT SEAS.—Surprise has been expressed that vessels going direct to Sebastopol take a smaller cargo than if they were only going to Constantinople, or that they diminish their cargo in the latter port before entering the Black Sea. The reason is this:—the density of the water of different seas is more or less considerable, and the vessels sailing in them sink in the water more or less, according to their density. The density arises from the quantity of salt contained in the water; and, consequently, the salter the sea is, the less a vessel sinks in it. As, too, the more sail a vessel carries the deeper she sinks in the water, it follows that the more salt the water the greater the quantity of sail that can be carried. Now, the Black Sea being sixteen times less salt than the Mediterranean, a vessel which leaves Toulon or Marseilles for Sebastopol must take a smaller cargo than one that only goes to Constantinople, and a still smaller one if it is to enter the Sea of Azoff, which is eighteen times less salt than the Mediterranean. It is known that the Mediterranean is twice as salt as the Atlantic, once more than the Adriatic, five times more than the Caspian Sea, twelve times more than the Ionian Sea, and seventeen times more than the Sea of Marmora! The Dead Sea contains more salt than any other sea; it is asserted that two tons of its water yield five hundred and eighty-nine pounds of salt and magnesia.

CHARACTER OF NURSERYMEN.

THERE is no class of community, I presume, more censured than nurserymen ; sometimes with, and sometimes without sufficient cause, no doubt. How often do we hear the purchaser exclaim that he 'never will buy another fruit tree, of any nurseryman, without first seeing and picking the trees out of the nursery himself!' His ejaculation implies suspicion of the nurseryman's honesty—that he has at some time been *bit*, and now is unwilling to trust the integrity of any one engaged in growing trees for sale. Now, there must be a cause for this almost universal censure—this apparently dogmatical phraseology; and the question at once arises, where is the fault? and what is the remedy? From personal observation of many years, I am fully convinced that the delinquencies lie at the door—in most cases—of both parties; and with your generous permission, will endeavor briefly to point them out.

First, as to the nurseryman. I have known instances where an order has been sent somewhat in this wise: 'Send me one hundred choice apple trees, twenty Early Harvest, twenty Yellow Bellfleur, twenty Winter Pearmain, twenty Tallman Sweeting, and twenty Rome Beauty.' The nurseryman takes his order in hand, walks through the nursery rows, and finds that he has no Yellow Bellfleurs left, and furthermore, discovers that previous orders have crowded upon him so hard, the balance of his stock was not 'choice.' Nevertheless, he concludes to fill the order by substituting for the Bellfleurs, twenty Dominie, which he has in great abundance. He thereupon writes his correspondent, apprizing him of the substitution which he has made, and praises up the Dominie apple, far beyond its real merits. The invoice comes to hand, and then ensues disappointment number one. The purchaser either had already plenty of the Dominie apple trees planted out, or had no kind of affection or faith in the fruit, whatever. He, of course, feels deeply chagrined, but concludes to hold his breath awhile, until the trees come to hand. They finally arrive, the package is opened, and then ensues disappointment number two. The most prominent feature in his order had been violated—they were not '*choice ;*' and besides, the packing had been entrusted to careless hands, and half the trees ruined! Now, then, can there be any two opinions—I mean divided opinions

—as to the real duty of that nurseryman upon the receipt of such an explicit order? Was it not discreditable in him to fill it under the circumstances? Was it any wonder that the receiver was thrown into a perfect frenzy of perturbation? I presume every reader will exclaim that the order should have been returned at once, with the reasons of non-compliance. This man sets it down in his note-book that when he purchases fruit trees again, *he will see them.*

The next order which comes to hand is from a new beginner. Perhaps he has been a merchant or steam-boat captain all his life, and scarcely knows one apple from another when he sees them. He has just retired from business upon a snug little farm, and is desirous to have upon it none but the very best varieties of fruits. Accordingly he sits down and writes to the nurseryman to 'send him one hundred apple trees, consisting of the best and most choice varieties.'

This order, it will be seen at once, gives the vender immense latitude. He has just got clear of his more scrutinizing customers, who have taken his best fruits, but here is a 'green one' who panders so handsomely to his cupidity, that he finds it almost impossible to avoid an exhibition of his moral turpitude, by sending forth indifferent trees, bearing such varieties that properly belong to the tail end of an obsolete catalogue. Even if his stock be good and abundant, it seems quite impossible for him to forego the temptation of sending off, under such circumstances, such trees as he may possess in great quantity—*and that nobody else will have.* When the trees of this purchaser come into bearing, he is sadly disappointed in the quality of his fruit, and without any discrimination between nurserymen, his patience being quite exhausted, he declares 'they are all a set of rascals,' and will never trust them more.

The manner of shipping trees, too, is another abuse which calls loudly for reformation. The nurseryman is too apt to send some stupid numskull to the river with a load of trees, and bills of lading in hand, which he gets signed by the clerk of a steamboat, when off he goes, leaving the bundles upon the wharf to take care of themselves, instead of giving explicit orders as to where they should be stowed; or, what would be better still, wait and see that they were put into the right place himself. As a general thing, steamboat men are about as ignorant of the nature of a tree, as a New Zealander is of Natural Philosophy; and, in consequence of this want of proper judgment, thousands upon thousands of choice trees are ruined by being placed in too close proximity to the steam boiler.

Thus it will be seen, that from inattention and disregard of the commands of purchasers, mutilation of the roots, bad packing, bad shipping, and slovenly bearing throughout, that confidence is almost entirely broken down, and unless a radical change takes place, can not be very easily restored.

Although the cases above illustrated have been stated hypothetically, yet, I have known parallel instances to them all. The bitterest letter I ever saw, was to a nurseryman, from a purchaser, where a most unwarrantable liberty had been taken, by substitutions in his order, and then, sending him the most miserable apologies for trees in the bargain. This last piece of chicanery admits of no excuse. It is arrant knavery and nothing else. The nurserymen retort by saying 'that other trades and kinds of commerce are subject to similar impositions.' This may be partially true; their disposition to intrigue in many instances, may be the same, but their opportunity much less available. The grocer who sells his barrel of sugar or bag of coffee, has it opened and examined by the purchaser in a very brief time. This serves as a constant admonition against imposition. Not so with the man who buys fruit trees, as the varieties and quality of fruit can not be known until they come into bearing, which may be from four to six years from the time of planting out. In speaking of discreditable transactions with either the grocer or nurseryman, of course *all* are not included. There are honorable exceptions in both cases, and in all communities of commerce of every grade. I propose now, to notice a still lower ramification in this nursery business, to wit:

There is a class of boasting, mountebank, itinerant vagabonds, occasionally prowling through the country, 'seeking whom they may devour;' and by whom many of the more ignorant, credulous part of community, are cheated to their heart's content; and sometimes, deservedly so, I think. For, to ask any of these knowing, bigoted individuals to subscribe for a journal advocating the interest of farm or garden, would be an insult to their understanding. They are unwilling to open their eyes sufficiently to create a focus on any intellectual object that stands out more than one inch beyond their protruding noses. And yet, these very persons are constantly being the dupes of some traveling agent, dispensing the most choice fruit trees with samples of fruit to match, i. e., to match until their trees come into bearing, and then they have the glorious consolation of matching a crab apple on the trees, with a Yellow Bellfleur, as

shown by the vender. Had these unfortunates been generous enough to pay two dollars per annum, for *The Cincinnatus*, or the same for the *Horticulturist*, published at Philadelphia, no doubt the calamities above spoken of would have been avoided. They would, in either case, have been forewarned of the approach of these impostors, and acted accordingly. But no, they do n't believe in 'book farming,' and so they go it blind as their grand-daddies did before them; and so thousands have gone, are now going, and will go, to the last syllable of recorded time. Experience must be bought at a dear rate, or they wont have it at all. One might pity their sufferings, were it not for their perverse stubbornness. For this, however, they are placed without the pale of compassion.

In the Spring of 1852, one of these audacious individuals referred to in the foregoing, made his advent in Cincinnati; issued small circulars, or bills, about the size of a man's hand, informing the public what a magnificent strawberry he had produced from a seedling; also, telling in what part of the market space he might be found each morning, where a glass jar of the precious fruit, in handsome preservation, hermetically sealed up, might be seen; and plants producing the same, for sale at one dollar per dozen. Boys were employed to distribute these bulletins in nearly every store and house in the city. Strange to say, *suckers* were so plenty that they fairly swarmed around the verdant gentleman. (!) Thousands went into the strawberry culture, that never grew a strawberry before; and perhaps had never heard of such a thing as HOVEY'S seedling, McAVOY'S superior, or LONGWORTH'S prolific. Indeed, some of our brightest Horticulturists were drawn into the net of this vagrant, and done for, to the tune of three or four dollars each.

It was amusing to notice with what tenderness and care the rare and valuable plants were nurtured by the latter fraternity. The Horticultural Society was to be amazingly surprised at some future day, when these gorgeous berries should make their appearance upon their luxurious fruit tables. But 'alas poor Yorick,' how uncertain are the things of time! We all wake up to disappointment sooner or later, and so it was with our horticultural dupes, in this instance. After the lapse of two years, we felt determined to assertain the result of some friend's experience in the matter. So, meeting Mr. POLLIWOG one day, about the middle of June, inquired with a good deal of solicitude as to those fancy strawberries which he had gone into with such glowing prospects. The only answer

which he gave us, was, to place his thumb in a horizontal position upon the end of his nasal organ, and permitted his four fingers to stand up perpendicularly. Presuming that my friend had lost the powers of speech, and had just come out of a dumb institution, we bade him good morning and left. One of our country friends informed us afterward that *his* plants was not worth three cents a thousand. The fruit produced were about the size of marrowfat peas, and as sour as white wine vinegar! But it 's a free country, and if there is any more of the same sort left, just let them pitch in when opportunity offers.

Some of our farmers and horticulturists seem determined and content to grope their way through a long life in the dark. Everything outside of the old beaten track is a humbug. Is there a remedy? Or shall we say as General JACKSON did in a certain instance, that 'they should die off so that their wives could get better husbands.' This might seem rather a *killing* consolation, but nevertheless it would amount to a *certain* cure.

But the next thing in order, is, to analyze, or notice briefly, the peculiar characteristics which govern the *purchasers* of trees. Many buyers in this line, approach a nurseryman as if he were a walking encyclopedia, on the subject of fruits, flowers, vegetables, evergreens, deciduous shrubs, shade trees, etc.; and after occupying his time in showing specimens, and answering questions for half a day, very modestly take their departure, on leaving an order, the whole profits of which did not compensate for the precious hours lost by the seller; or perhaps they may have consoled the nurseryman by telling him that in a few days they would call and leave their memorandum; but which they take good care never to do. Of course, they are voted incorrigible bores, and the nurseryman swears if they ever do call again, that their boorishness shall make them the subject of a regular shave.

The want of magnanimity in such people, and lack of a proper discrimination as to the common courtesies and amenities due from one citizen to another, render them very eligible subjects for skillful shaving; and they often get it done up in gallant style. Thanks are then returned by loud imprecations upon the heads of *all* nurserymen.

There is another class of buyers, always on the hunt for *cheap* trees. They jew and screw to the last penny; and by making the vender believe that competition is running very high—that some

other seller has offered trees decidedly lower—induces him to make sales below regular rates; and, finally, when their bills are rendered, flatly refuse to pay for the packing, one single cent. Now, all this is most deplorably wrong, and calls for amendment; for, every hundred packed by the nurseryman, of usual size, costs in actual cash an outlay of fifty cents to one dollar, for packing material. And, if not paid for direct, must be made up in additional price for the trees. That man who refuses to pay for packing, deserves no pity, if his trees are lost in consequence of a deficiency in this respect. A spirit of magnanimous generosity is absolutely due on the part of purchasers, or else, as this world now jogs, their complaints fall to the ground. If the purchaser has done his duty in the premises, the responsibility falls upon the other party, for any failure that may occur.

There is another class of reckless purchasers, that are always to be dreaded. We have known some who have sent out ignorant men into the field with their bundle of trees, to be planted without proper supervision. The bundles are opened, and the roots, perhaps, exposed to a warm sun during the day, and something of a severe frost at night. Holes are dug, and they are *stuck* in as you would put in a locust post. The growing season comes on, but the trees—four out of five—refuse to grow, when the nurseryman is pitched into, as if he were made of plastic putty. He is told that the trees were of 'no account'—were 'winter killed'—'dried up'—'roots cut too short'—'badly packed'—or some other abominable casualty, which demands indemnification. The winter of 1855-6, was excessively severe, and debilitated the vital energies of trees, to a greater extent, perhaps, than for many previous years. The succeeding summer was unusually hot and dry; hence, both together combined to render complaints more prolific against nurserymen, than usual. Hundreds, in consequence of these unforseen casualties, came back for reclamations, who did not deserve them.

Buyers should always bear in mind that sellers are not insurers—and that when trees are well packed, shipped in good order and 'well conditioned,' the nurseryman has no more right to be called upon for indemnity, than the merchant has for a cargo of merchandise, which may have been lost by the sinking of a steamboat.

When nurserymen shall issue catalogues containing more of truth than falsehood; attend diligently to the commands of correspondents, always charge for packing, avoid clap-trap and humbug—and,

when buyers shall approach nurserymen, not as if they were land-pirates, but honorable dealers—then it is, that the calamities enumerated in the forgoing, may be ameliorated; not before. The first presumes too much upon the gullibility of their customers; the latter too much upon the want of integrity in the former. There are good and bad of both. Respectfully,

WILLIAM STOMS.

Cincinnati, February, 1857.

For "The Cincinnatus."

PROF. F. G. CARY:—

DEAR SIR.' Will you oblige the friends of HON. M. P. WILDER. By republishing in your next number the following *views* on the *dwarf Pear* as held, and advanced by him at the U. S. Pomological Societie's meeting in Rochester, September last.

Very Respectfully, Yours,

A. H. ERNST.

Spring Garden, February 4th. 1857.

DWARF PEAR TREES.

PEARS upon the quince should be planted in a luxuriant, deep soil, and be abundantly supplied with nutriment and good cultivation. They should always be planted deep enough to cover the place where they were grafted, so that the point of junction may be three or four inches below the surface. The pear will then frequently form roots independently of the quince, and thus we combine in the tree both early fruiting from the quince, and the strength and longevity of the pear stock. For instance, of trees of the same variety, standing side by side in my own grounds for ten years, and enjoying the same treatment, those on the quince stock have attained a larger size, and have borne, for seven years, abundant crops, while those upon the pear stock have scarcely yielded a fruit. We have, also, others on the quince, which, twenty-five years since, were obtained at the nursery of MR. PARMENTIER, where now is the most populous part of the city of Brooklyn, N. Y., and which have borne good crops for more than twenty years, and are still productive and healthy.

That the introduction and cultivation of the pear upon the quince has been a great blessing, I entertain no doubt, especially in gardens, and in the suburbs of large towns and cities. And as to its adaptation to the orchard, I see no reason why it should not succeed well, if the soil, selection, and cultivation be appropriate. A gentleman in the eastern part of Massachusetts planted, in the years 1848 and 1849, as many dwarf pear trees as he could set on an acre of land at the distance of eight by twelve feet, and between these rows he planted quince bushes. In the fifth year from planting, he gathered one hundred and twenty bushels of pears, and sixty bushels of quinces. Of the former, he sold seventy bushels at five to six dollars per bushel, and he now informs me that he has lost only three per cent, of the original trees, and that the remainder are in healthful condition.

DWARF PEARS.

Messrs Editors :—

I observe by your February number, that my friend Farmer Stoms, is slashing away with his pruning hook at the *Dwarf Pears.* This is all very well if he will only discriminate, and merely cut down the worthless varieties—but he pronounces the *whole* 'a humbug.' Now this is a bold assumption and one, against which, I ask the use of your pages to enter my protest. In doing so I shall be placed, according to Mr. Stoms' classification, in the catalogue of 'old fogyism,' or 'chilly conservatism,' and not with 'Young America' in its head long race in progress and rapid jumps at conclusions. I am obliged to him for awarding me so respectable a position, for with all due deference to that precocious bantling, 'Young America,' I have no ambition to adopt some of its modern inventions—*Mormonism* in religion ; *Spiritualism* in philosophy ; or *Fillibusterism* in politics. Neither do I desire to invite the *great Hungarian*, or any other distinguished foreigner, to interpret for me the meaning of Washington's Farewell Address. So far, then, as the above whims and vagaries of 'Young America,' in its efforts at progress, are concerned, I prefer to remain a 'chilly conservatist.'

But, to the point : Are Dwarf Pears adapted to this soil and cli-

mate? and are they profitable to cultivate? These are the questions at issue. I will briefly state what I know from my own experience and observation, and omit quotations from others at a distance, who have had no practical knowledge of what can be done here in the cultivation of the Dwarf Pear.

I have found several varieties of these miniature fruit trees to succeed admirably with me. Among others, I will mention the Bartlett, Seckel, Tyson, Julienne, White Doyenne, Bloodgood, Louise Bon De Jersey, Glout Morceau, Dutchess D'Angóuleme, Doyenne Robin, etc., etc.

These are planted around the borders of my garden beds, about eight feet apart. They occupy little room, and require but slight attention. Occasionally a sucker from the stock has to be cut away, or a straggling branch shortened in—nothing more. They take care of themselves for anything else. I am well satisfied that if I should manure, hoe, pinch in, water, and prune and fuss about them, as some fidgety cultivators do, that I should either kill them, or get no fruit.

Some of my neighbors who planted in deeply trenched ground, highly manured, got an enormous growth of wood, *but no fruit.* The trees that were afterward removed to poorer soil, now show plenty of fruit buds.

My own experience in planting Dwarf Pears only extends back eight years, but my observations much farther. The first specimens I saw in perfection were in the garden of my friend, Mr. A. H. Ernst, some ten years ago. They were beautiful in form, and full of fruit. The trees were apparently six or eight years old. Unfortunately, the rabbits ate the bark off many of them the next winter, and they died.

I had previously been prejudiced against dwarf fruit trees, but the sight of Mr. Ernst's pears overcame my conservatism, and I bought a dozen trees to try for myself. After two years, I bought fifty more, and two years ago one hundred in addition. I have now about one hundred and sixty in all. Some bore a few pears the first year they were planted. Two years ago, a few of those first planted produced from twenty to forty pears each. Even last year, bad as it was for fruit, some of the trees bore fifteen to twenty pears—the trees only five to six feet high.

Nearly every tree that I have now shows an abundance of fruit buds, and, if this proves to be a good fruit year, may afford a practical refutation of at least one of Mr. Stoms' positions.

So much for my own *experience;* and now for my *observations.* During the past few years, in visiting my neighbors, and the nurseries in this vicinity, I have seen many beautiful specimens of the Dwarf Pear, and the information I received was almost invariably in their favor. Some persons observed they were nice little pets, they took up but little room, thrived well with slight care, and always afforded a fair crop in proportion to their size.

So far, then, as their adaptation to our soil and climate is concerned, I give my testimony in their favor, and recommend them unhesitatingly for amateur culture. Thus far, *they are no humbug.*

But whether they can be cultivated *profitably* for a market crop, is another question, and one that I am unable to answer from my own experience. I rely principally upon my standard pear trees—about eighty in number—planted thirteen years ago, (a few of which have not yet borne fruit) for supplying me with pears for the market, and intend to use the dwarfs, if they produce a surplus, for that purpose also. This I have yet to test.

I now call upon those who have had experience in the cultivation of Dwarf Pears, to state whether, in their opinion, they will be profitable to cultivate for market in this vicinity, or not, with such direct or collateral proofs as they may be able to present. I hope the *Dwarfs* may not be put down by the *Giants* without first having fair play.

R. BUCHANAN.

Clifton, Feb. 9th, 1857.

AT a late meeting of the French Academy of Science, at Paris, Dr. DONNI presented and explained a new instrument of his invention, for the purpose of measuring the quantity of air required for respiration by human beings, which he denominates a 'Pneumatometer,' and which he makes use of to ascertain the condition of the lungs, and the degree of injury caused to them in pulmonary diseases.

By an extended series of experiments made on a large number of subjects, the doctor finds that the average amount of air respired by persons of ordinary form and good health, from the age of fifteen to thirty-five years, is from 183 to 198 cubic inches per minute; and from the ages of thirty-five to sixty years, from 122 to 153 inches—the amount being largely exceeded or diminished in exceptional cases, among which may be mentioned a person of extraordinary stature, exhibited in London as a 'giant,' who respired 428 cubic inches, or more than one-and-a-half imperial gallons of air per minute.

DIRECTIONS FOR THE CULTIVATION OF THE SORGHO SUCRE.

THOUGH we are without experience in the cultivation of this plant, yet, thinking our readers would soon require some practical directions in relation to its proper planting and tillage, we have gathered from different reliable sources, the following:

Choose a warm mellow soil, such as is well adapted to Indian corn; plow early; plow deep, say from six to eight inches; plant as early as you would corn, say from the twentieth of April to the tenth of May, or as early as the ground is in good condition; and it is advisable, as it is still an experimental matter with us, to plant at different times, commencing by starting some in hot beds; then plant from the time that it will do to set in the open air, until the 20th of May or 1st of June. The direction sent us from the Patent Office is as follows: Cultivate as broom corn; plant in hills three feet by two feet apart, with ten seeds in a hill, and reduce each hill to six stalks at first hoeing; being careful not to plant in the vicinity of dourah corn, chocolate corn, or broom corn, as it mixes freely with these plants, and will render the seed unfit for planting.

We would advise to try it at different distances, say from four to five feet apart each way; and some drilled in rows, running north and south; the stalks thinned, say one, to every eight inches in the row, and the rows five feet apart, so as freely to admit the light and air. Cover not more than a quarter of an inch deep, with very loose and mellow earth.

Cultivate first with harrow, weeding the hill with care, as it comes up so delicate as to require close attention, lest you pull it up or injure it. Then follow with the cultivator, and plow as you would your corn. If suckers spring up, as they will, and you desire seed, it would be well to pinch them off; if for syrup or forage, let all grow.

Whenever the seed shall be hard and black, cut off the upper part of the stalks, about three feet long, and hang them up, like broom corn, in a dry place; next, cut your stalks, first pulling off the leaves, and dry as you would corn fodder; here many experiments will suggest themselves, such as the trying of the stalks, leaves and all, properly cut and prepared for fodder; feeding the stalk

product also, to hogs, crushing a portion in a cider-mill—or by other means—and pressing out the juice. After pressing, put the juice over a slow fire, and boil about four-fifths away, as you would the sap of the sugar maple. Use a little lime, or lime-water, to neutralize the acid, or not, just as you find it preferable. Skim as you boil, preserving the scum taken off to feed to the pigs. Deal with the fodder as you would with that of corn. Your own minds will suggest many experiments, and as facts from various sources will enable us to rectify errors, and more readily assist us to come to a correct mode of cultivation, and ascertain the economy and practical utility of this new crop, we desire all who have the opportunity, to be experimenters with us, and send us the result of their experiments in writing.

THE DWARF PEAR CONTROVERSY.

As will be seen from the pages of our own, and other Agricultural and Horticultural journals, there is great contrariety of opinion on the subject of the cultivation of Dwarf Pears. Hence, we have encouraged a free expression of the views of different cultivators.

In this number will be found a very candid and fair exposition of what may be said in their favor, in reply to an article in our last issue. Also numerous important directions for their successful culture, soil best adapted, etc.

We hope a few years' more experience will settle many of the points in controversy. We recommend the careful perusal, of the following, from the pen of one of our experienced nurserymen, as also that of Mr. BUCHANAN, one of our most successful amateur cultivators.

DWARF PEARS.

After hearing the remarks of my friend, Mr. STOMS, delivered before the Cincinnati Horticultural Society, in October last, and reading his article in the February number of *The Cincinnatus*, as well as an article published in a previous number of the same publication, on the Dwarf Pear, and hearing his denouncement of them as

Humbugs, and his sad tale of disappointment with them, my heart sympathizes with him in his sad disappointment.

But knowing him to be a philanthropist, and that he has the good of the pear-growing community at heart—*excepting those rascally nurserymen, who pile on so exceedingly, when about to sell a brother seedsman Dwarf Pears*—I know it will be cheering news to him to hear that others have done better than himself, and that their experience differs from his. I know his case is a bad one, and I do not expect to be able to say anything to alter his opinion after the great JEFFRIES—that notorious scribbler on all subjects—has pronounced against them; anything said by any one else—and particularly a nurseryman—will have little weight with him. Mr. STOMS seems to intimate that the authority of JEFFRIES is indisputable. It would have been of vast benefit to the present generation, had JEFFRIES lived two-hundred years ago, for according to his doctrine, it is folly to attempt to grow pears at all, either as standards or dwarfs. He makes it appear that we have been very unprofitably employed, in trying to grow pears for that length of time; now had JEFFRIES lived at the time pear culture began in this country, he could, and of course would, have taught our forefathers the uselessness of the attempt, and a vast amount of money and labor might have been saved. JEFFRIES proves nothing so clearly, as that he is writing at random on a subject that he but poorly understands, and that he has purchased a few Dwarf Pears of some nurseryman, which, from some cause—perhaps bad culture or an improper soil, or bad selection of varieties—have not succeeded; and therefore, he feels it his duty to rail against Dwarf Pears and the Nurserymen. Had Mr. STOMS given the other side of what Dr. WARD has said of Dwarf Pears, it would put a different face on the thing, but he has carefully avoided it. Any one reading his article, and not Dr. WARD'S, would be led to suppose that Dr. WARD had met with disastrous failures in their cultivation, but that is not altogether so; with some kinds, and on proper soil, he has been very successful; and cautious cultivators ought not to condemn those varieties that do succeed well, because others do not. Dr. WARD points out a case of the utmost importance in regard to the proper soil for the Dwarf Pear; he says that in one part of his grounds, they proved a decided failure, although they received the richest culture and the most care, while those removed to a distant part of the field, succeeded well. The cause is to be found unquestionably, in the fact that the soil in the

latter is underlaid with a clay substratum, while that of the former is a gravelly loam. Such facts as these are what we want, to enable us to cultivate the Dwarf Pear to advantage, and speak more in favor of their culture in this vicinity—where nearly all the soil is underlaid with clay—than all I can say *for*, or Mr. STOMS *against* them.

I will now state what my own experience has been, and give my views on the subject. I have been a close observer of the character and habits of Dwarf Pears for some years, and have cultivated them to some extent; so far as my experience goes, I am well satisfied with the result; I have succeeded past my expectation, and am far from the opinion that they are *humbugs*. But I am satisfied that we have much to learn of their character and culture; and that when we have studied them properly, and understand their wants and nature better, we shall find it as easy to cultivate some kinds of Dwarf Pears, as it is to grow fine peaches; and I hope yet to see fine pears in our markets, plentiful from the product of Dwarf trees. I am satisfied, in my own mind, the thing can be done in this section of country, however they may have failed in unfavorable soils and climates. That we have a soil and climate peculiarly adapted to the cultivation of the Dwarf Pear, can be proved as well by the partial failures, in other less favorable soils and climates, as by our success here; for, notwithstanding Mr. STOMS' signal failure, I contend that Dwarf Pears have succeeded here generally, and that the prospect for their future cultivation is favorable. I have yet to see the first failure where the following all-important items were observed:

1st. A proper selection of varieties such as are known to succeed on the Quince.

2nd. Good healthy trees worked on a good stock—the *Augers*, or *Paris*.

3rd. A good loamy soil of moderate fertility, on a clay subsoil, and from eighteen to twenty inches deep.

4th. Planted so deep that all the quince stock is below the surface.

5th. Ordinary good cultivation and moderate pruning, but not pruned so severely as to deprive the plant of power to send down woody matter enough to keep the roots healthy and active.

Nearly all the failures can be traced to a want of one or more of the above requisites to successful cultivation.

I have now growing in my nursery a row of about twenty Pear trees, about half standards, the balance dwarfs. They have been

planted four years, have all done well, and are about the same in bulk; the only difference in their appearance, is their hight, the standards being allowed to form their heads higher than the others. The ground before plowing, was worked about eighteen inches deep, and had a slight manuring, but none since they were planted. On one side of the row, is a hard beaten path, that has been constantly tramped for four years, and on the other side, at a distance of three and a half feet, is a row of nursery trees that were planted at the same time with them. All the cultivation they have ever had, is to keep the ground loose and clear of weeds, which is done by means of the *cultivator* and *hoe*. The only pruning they have ever had, is an occasional stopping of a strong shoot, and taking out any crowded branches that become weak. I do not think there has ever been one hour's labor spent on them since they were planted, other than the cultivation before spoken of, with the cultivator and hoe. Now, if this is high cultivation and petting, I am mistaken in what is meant by those terms. The Dwarfs have all fruited but one, and that, as well as the others, is set very full of blossom-buds; some of them have borne fruit three years out of the four they have been planted, others two years, and the remainder one. On two or three of them, I have had as many as twenty-five or thirty pears at a time—on others less. So much for the Dwarfs. On the standards in the same time, I have had just one pear. I have other Dwarfs on my grounds, that have been planted at the same time as the standards, and all treated alike, and in all cases, the Dwarfs have kept pace with the Standards.

One more case, and I shall close for the present, not that I have said all that I would like to say, but because I think this enough for the present; at some future time I may revert to the subject again.

One of my hands has a small spot of ground close by my nursery. He takes quite a delight in cultivating his little spot of ground, and is quite a successful cultivator. Four years ago, I let him have four Dwarf Pears, two years old, from the bud; these he planted in a piece of ground of very moderate fertility, that had no other preparation than a common digging, such as is usual in common garden culture; they have never had any pains taken with them; all the cultivation they have had, has been in digging the ground on one side of them, and planting vegetables almost close up to their branches; on the other side is a little grass bank, that has been al-

lowed to grow and encroach upon them, until the grass is now growing close up to the stems on that side. They have had but little pruning, only a few of the strongest shoots shortened, and yet they are handsome trees, vigorous and full of promise.

You have heard what he has done for his trees, now hear what returns they have yielded. The first year after planting, one tree —a Dutchess D'Angouleme—bore him eight splendid pears, that would have averaged nearly a pound each, the second year, two more bore fruit, and the next year all four bore a full crop of fruit. From his little row of four trees, he has exhibited fruit before the Cincinnati Horticultural Society for two years, and at its last exhibition, took the premium for the three best plates of pears, of five each.

Now, if these Dwarf Pears are *humbugs*, what a pleasant thing it is to be humbugged in such a way. I hope to live long enough to have these humbugs round me by the tens of thousands, and I am satisfied that if I can not coax the public to buy the trees, I can 'come it over them' with the fruit.

JOHN SAYERS.

Cottage Garden and Nurseries, Feb., 1857.

ECONOMY IN WINTERING STOCK.

BY P. MELENDY, COLLEGE HILL, HAMILTON CO., O.

SHELTER.

THE first requisite in providing for domestic animals, in winter, is shelter.

There are three facts connected with the wintering of stock, which should be well considered by every one who keeps a cow, horse, pig, or sheep.

1st. It is a fact, that the production of animal heat in the body, consumes more than half of the food taken into the stomach.

2d. It is a fact, that external warmth serves as an equivalent of food to an extent, which is of great importance.

3d. It is a fact, that the aliment daily taken into the systems of all animals, should be precisely adapted by its chemical composition and solubility, to the natural wants of every organ and tissue in the living animal.

LIEBIG asserts that, "Our clothing is merely an equivalent for a certain amount of food." In other words, if we keep ourselves comfortable and warm, we can not eat so much, because the amount of heat to be supplied by the food is diminished. These facts are as applicable to animals, as to man, and they teach the farmer the necessity of providing shelter for his stock. It has been proven by experiments, that animals in the winter, exposed to the cold, beating storms do not thrive as well, nor keep in as good condition, as those housed, although they consume from fifty to one hundred per cent. the more food. The length and severity of our winters are such, that the feeding and care of stock have strong and peculiar claims on the farmer.

We should expect, on a well regulated farm, that the stock would all have good, warm, comfortable, and well ventilated stables; and that its owner would not suffer a hoof on his premises to pass a night without a good roof for shelter and warmth, and good, clean, dry litter for bedding. The less amount of food that will be required, the greater economy with which it may be fed, the freedom of stock from disease, the amount of manure saved, render it a matter of economy to thus care for our animals. We are told by some farmers, that they are not able to supply shelter for all their stock. If you are not able, sell what you can not provide for. It has been conclusively shown, by experiments, that two animals well sheltered and fed will yield more profit than four poorly kept.

There are other advantages in shelter. Continual exposure to storms, though the degree of cold be not great, is very injurious to the health of stock. The continual saturation of the skin with water prevents the natural exhalations, and tends to produce disease. Now we think there is neither kindness nor economy in such treatment of domestic animals.

There is at the present time an extraordinary disease among our cattle in the West. During the winter months, the animal is seized with an infection of the nose, creating an itching so intense as to make it plunge its nostrils among thorns, or beat its head against trees, endangering life itself by ill treatment offered its ears, eyes and head. Now any man that has been at at all accustomed to animals, and whose education has enabled him to observe the analogy between their diseases generally and those of men, must perceive, that, as impurity of blood produced by poor diet and exposure subjects man to various cutaneous affections, so in like manner similar

ill treatment applied to stock engenders corresponding diseases. The fact is, if we desire to save our stock, and make this Western Country the Great Stock Market of the world, we must entirely abandon the present mode of treatment, and substitute a system consistent with reason and humanity. It is declared in the BIBLE that, the merciful man is merciful to his beast. We have seen civilized, humane farmers throwing fodder to their stock, that had no shelter night nor day, though the snow lay upon the frozen earth, and the keen winds sent a shiver through their bones, as if the tines of a fork had penetrated their flesh. He can not bear such weather himself, but somehow thinks that stock is not made of flesh and blood, and do not feel uncomfortable with a frozen bed and frozen food, given to them in a freezing atmosphere. Every animal before him has his backbone arched, and feet drawn up under him, and shivers; but the farmer takes it as an indication of comfort! He does not believe that his stock has the same nature as himself, and needs protection as much, in order to thrive. To what slow tortures are multitudes of beasts subjected, at this season, through the ignorance of their owners; and this piece of barbarism is as wasteful as it is cruel. It takes a third more feed to winter stock in this way. Either enlarge your barns, or diminish your stock. Let not this barbarous practice of thus wintering stock any longer disgrace our western country.

February and March are the hardest months in the year on stock, and they require more attention, care and feeding than at any other time. All young stock should be kept steadily growing, and should be kept in a uniformly good condition the year round. If they are neglected at this time, and suffered to run down, it will take some time to recruit them. Their ability to stand the weather is less at this time than earlier in the season. They must eat in proportion to the cold, or the fat and flesh will be wasted away in the production of the warmth necessary to sustain life.

FOOD.

In wisely selecting the food which is best adapted to the natural wants of neat cattle, milch cows, working teams, sheep and poultry, we all have much to learn.

My experience in feeding stock is this, that there is a great advantage in *cutting* feed, such as straw, corn stalks and hay, as a matter of economy. It aids in digestion, and is much better relished by the animals: there should be added some bran, shorts or corn meal.

The cooking or steaming of food for stock, I consider quite essential, for it effects important chemical changes in the substances cooked. I contend, then, food that is cooked for stock will go one third farther than when it is given in the hard, heating, binding, irritating corn. Roots should not be overlooked; they serve as a change from dry food. Carrots turnips and beets can be easily grown, and no farmer should be without them during the winter season. They should be fed once a day, at least: variety is essential to a good appetite, and it is unquestionably true that roots will have the effect of making stock more healthy.

Salt is important; a supply should be placed where they can obtain it at any time; they will never eat more than they need. Stock should be fed regularly, and at stated times. They should never have more at a time than they can eat up clean. If they leave any, it should be immediately taken from them.

GROOMING.

Grooming is highly important. Good rubbing with curry comb and brush opens the pores of the skin, circulates the blood to the extremities of the body, produces free and healthy perspiration and stands in the room of exercise; thus the groom is beneficial to the horse; and I contend that it is equally so with cattle. I think that milch cows and cattle that are stabled, should be groomed every day. I believe that milch cows should be curried to insure a good mess of milk; and in conclusion, I think stock that have good warm comfortable stables, feed cut and cooked, and are groomed every day, will thrive and be in better condition, on one half of the food, than those that are left to take care of themselves in the storms and cold blustery winds, with double the amount of food.

A Large and Costly Mirror.—The largest mirror plate ever imported into the United States, has just been put into the saloon of the St. Nicholas Hotel, New York. The plate is seven by eleven feet, and half an inch thick. The original cost, and the cost of importation, was $1200; the frame and putting up, $200, making a total of $1400.

CIN'TI HORTICULTURAL SOCIETY—PROCEEDINGS.

SATURDAY, Jan. 24.

PRESIDENT WARDER in the chair.

Further time granted for report of Committees on Premium List and on the subject of the demise of M. MICHAUX.

The President, Dr. WARDER, presented some cuttings from his peach-trees, taken January 22d, for the examination of the Fruit Committee, who reported that they found none of the buds injured by the severe cold thus far. And the President stated that on examination of twelve buds, he found only two injured. He also remarked that, by reason of the preceding season being such as to harden up the new wood of the peach-tree, our fruit was in far less danger from the severe cold than it was last winter.

Mr. CARY also remarked that such was undoubtedly correct, and said that the summer and fall of 1855 having been wet, the rapid growth of the tree was greatly promoted, and so great was the succulence of this growth, that it was unable to endure the severe cold of last winter, and that therefore both fruit and branches were destroyed by the low temperature. But as our last summer and fall were extremely dry, the woody growth was in a condition much more favorable for the endurance of the severity of the present cold, and, therefore, our peaches are as yet safe, while by a like temperature they were last winter destroyed.

W. F. BOWEN was elected to fill the vacancy on the Vegetable Committee, caused by the resignation of Mr. PENTLAND.

On motion, a vote of thanks was tendered Hon. T. C. DAY, for Public Documents sent to the Society.

Mr. ERNST exhibited a handsome specimen of molasses made from the Chinese sugar-cane, which was much examined and tasted, and pronounced the best specimen yet presented to the notice of the Society.

Prof. CLEAVELAND presented to the Society, as a donation to the library, some valuable printed documents, containing transactions of the Massachusetts Agricultural Society, and thanks tendered.

The Fruit Committee reported the following fruit exhibited:

By Mr. MEARS—The 'Sheep-nose.'

Mr. SCARBOROUGH—A fine looking Apple, supposed to be 'Winter Sweet Paradise;' and Mr. BOWEN some of the same.

Mr. GILBERT—The Willow Leaf, Delight, Newtown Pippen Wine Sap, American Golden Russet and Yellow Bellefleur.

SATURDAY, Jan. 31st, 1857,

President in the Chair.

Reports of the Committee heretofore appointed, on the demise of Mons. MICHAUX, and on the formation of the Premium List, being called for under the order for unfinished business, the Committees announced that they were not yet prepared to report, and on motion, further time was granted, and the Committees continued.

The Corresponding Sec'y read his correspondence with Hon. T. C. DAY, which was approved and ordered to be filed.

The President also presented and read an interesting correspondence with the Pomological Congress of France, on the subject of *Pomological Nomenclature*, which was approved and ordered to be filed

On motion, ordered that a call be made for the meeting of the Chairman of the standing Committees, at the Society's Hall, directly on the adjournment of the next stated meeting.

An inquiry was made touching the ingraftment of our finer varieties of apples on the indigenous crab stock, which led to an interesting discussion, but no general expression of sentiment was made by the Society's action; and as the inquiry had elicited considerable remark in reference to points in vegetable physiology, on motion of Mr. FOOTE, it was resolved that a paper on 'The Bud' be made the subject of a special order at the next meeting, and that the paper be prepared by J. W. WARD, Esq., and Mr. WARD being present, accepted the order. Mr. BUCHANAN presented to the Library several books and publications touching the cultivation of the Sugar Millett.

On motion of Mr. ROBB, a Committee was appointed to investigate and prepare a paper on the subject of 'live fences.' The Chair appointed Messrs. ROBB, CARY and BUCHANAN, such Committee.

Mr. HOWARTH moved that in our correspondence with the French Pomological Congress, the President be instructed to state that we have a deep interest in the subject of different climatic temperatures, in different countries, and request a corresponding attention to that question on the part of the French Society. But, it being stated that the present correspondence did not contemplate this topic, the motion was lost.

Mr. ROBERT CLARKE presented to the Library 'The Transactions of the New York State Agricultural Society,' for which a vote of thanks was tendered.

SATURDAY, Feb. 7th 1857.

Vice President STOMS in the Chair.

The Committee heretofore apppointed to give suitable expression of the Society's sentiments in relation to the recent decease of Mons. FRANCIS ANDRE MICHAUX, of France, late a corresponding member of this Society, submitted the following Report and Resolutions:

REPORT.

The announcement of the death of MICHAUX, has excited in this Society a deeper sensation than could have been produced by that of any one of the numerous distinguished men of science in Europe ; for not only was the foundation of his fame and his usefulness to mankind based on the same efforts to do good, which we acknowledge as our chief object and duty, but our Institution is indebted to him for marks of attention and kindness, peculiarly grateful and encouraging to its youthful efforts.

He died full of years and of honors—honors not displayed in the dazzling magnificence of those bestowed on military heroes, but rooted in the hearts of the lovers and benefactors of their race—of those who desire and assist in the progress of human improvement. No taint of those crimes against humanity, which, during a portion of his life, overwhelmed with sorrow and regret, the best and wisest among the good and wise of his native country, was ever found upon him ; nor during his long and brilliant career was aught but good proposed by or derived from his labors.

That correct appreciation of the importance of good taste, which inspires efforts for its extensive cultivation and diffusion, and which is the paramount object of this Society to effect, was in him a strongly marked characteristic, and it yielded its appropriate fruits. Among the choicest of these fruits are, a desire to benefit mankind, to diffuse a knowledge of the best means for this end, and zealous efforts in such a cause.

F. ANDRE MICHAUX was the worthy son of a worthy father, in whose steps he trod and overpassed. In the zeal with which his favorite science, Botany, inspired him, he was led to visit America, and his magnificent works on its sylva, on its oaks, and its pines, bear testimony, not only to his laborious diligence, and rigid investigation of sylvan characteristics, but of the delight afforded him by the rich variety of interesting objects in the virgin forests of our fertile regions.

To the world generally, but to his native land especially, his life and labors give valuable lessons on the importance of cultivating good taste, for a sad want of it is there displayed in the superior honors bestowed on those whose fame is founded on destruction, to those bestowed on the patriots whose merit is the promotion of production.

France can display a list of as brilliant and successful cultivators of sicence and the liberal arts as any other country ; but of glory she gives them only the crumbs which fall from the table of her military heroes. Napoleon, in his expedition to Egypt, and his most honorable work, the compilation of a code of laws for his country, gave them some of these crumbs in the style in which a DIVES would give to a LAZARUS, or a master bestows favors on a favorite slave. The world glorifies a BONAPARTE ; the virtuous but lim-

ited number of the promoters of human happiness, remember the efforts of MICHAUX for the benefit of his country and the world; and the comparative smallness of their number, exhibits the prevalence of the weeds of bad taste among the flowers which adorn the paths of life and promote happiness. Let us be diligent in our efforts to eradicate those weeds, and to cultivate those flowers which promote and exhibit the beauties of high civilization.

The visit of MICHAUX to America, in 1804, the account of which was published in a work interesting and instructive in a high degree—as all books of travel ought to be—with his splendid scientific works, gave him a reputation with his American readers which has been preserved and increased during the remainder of his life. The pamphlet of which he sent a copy to this Society, giving accounts of his efforts to improve the cultivation of the vine, a branch of culture so important to his country and ours, gives us a beautiful exemplification of his desire to be useful to mankind—a desire which age could not extinguish. nor that love of repose which it is so apt to inspire, control.

The gold medal granted him by his country, and which is here exhibited, was entrusted to the care of our Society, accompanied by a letter to our associates—Messrs. BUCHANAN and LONGWORTH—characteristic of the kindness of his nature, of his extensive benevolence, and his desire to encourage that purity of taste which leads to the best results of civilization—a liberality beyond the power of gold.

The oaks and the pines of America are monuments to the memory of MICHAUX, ever green and ever glorious—the works of God—they will

"Give his laurels everlasting bloom."

The art of man can not construct such monuments, though a POWERS might, with his magic chisel make

"Breathing sculpture emulate his fame."

Yet those trees of the forest which he loved and honored for their beauty and usefulness, convey nobler truths to the heart and soul, and are more appropriate to call up the memory of this enthusiastic lover of nature. And in the rustling of their leaves fancy will hear whispered an epitaph more appropriate than those borne by monumental brass. And imagination will body forth those lessons of purity and truth which a diligent attention to the works of nature will always yield. It will 'hold high converse' with those children of beauty, the flowers of the field; with those emblems of strength and power, the trees of the forest; and with those humbler shrubs whose presence is necessary to give that variety to our landscapes, which the completeness of their beauty requires; and they all will combine to give a brighter record than any costly fabric of marble or ornament can exhibit, of the worth and of the benefits to which we are indebted to MICHAUX.

With these views, your committee recommend the adoption of the following resolutions:

Resolved, That the Cincinnati Horticultural Society, deeply sensible of the loss sustained by the world in the death of MICHAUX. is desirous to add its testimony to those lovers of nature and cultivators of science, throughout the civilized world, of respect for his memory and regret for his loss.

Resolved. That the members of this Society duly appreciate his generous feelings toward their country. as displayed in his noble efforts to give the world a knowledge of the riches yielded by its fertile soil and benignant climate.

Resolved, That we will preserve, with reverential care. the medal intrusted to us by his kind and encouraging attention to our youthful institution. trusting that it may prove a stimulus to us and our successors, to exertions in those pursuits by which he was so highly distinguished.

Resolved. That we tender and transmit to the family and personal friends of MICHAUX, our sympathy for their loss, combined with congratulations on their happiness in having

so long possessed that treasure, so rarely bestowed, and of such inestimable value, the privilege of familiar intercourse with such a man.

Respectfully submitted,

JNO. P. FOOTE, }
R. BUCHANAN, } Committee.
GEO. GRAHAM, }

On motion of Dr. WARDER, the report and resolutions were unanimously adopted, and the execution of the last resolution was ordered to be intrusted to J. P. FOOTE, Esq.; and, on further motion of Mr. GRAHAM, it was ordered that the gold medal now exhibited, be deposited, for safe keeping, in the Commercial Bank of Cincinnati, and that a copy of the present report and proceedings, and of the correspondence and proceedings had by the Society when said medal was received, be drawn up and deposited therewith; also, that a copy of the present report and proceedings be forwarded to the 'Courier des Etats Unis' of New York.

An interesting communication, from Mrs. ELIZABETH D. ROBB, of Cincinnati, was received and read, in relation to the application of quick lime and sulphur to prevent the ravages of the curculio on the Plum. The communication was referred to the Committee on award of $100 premium, for a prevention of injuries by the curculio.

The paper on the Bud, by J. W. WARD, Esq., being the special order of the day, was announced, when Mr. WARD proceeded to give a most interesting and learned exposition of the subjects in vegetable physiology included under his topic. At its conclusion, on motion of Mr. CARY, it was ordered that the thanks of the Society be tendered Mr. WARD, and that the discussion of the points and views therein raised, be made the special order of the day at the next stated meeting.

COL. WILDER—DWARF PEAR CONTROVERSY.

WE have received a most excellent article from the pen of the Hon. MARSHALL P. WILDER, in reply to Mr. STOMS' strictures on his views in relation to the cultivation of Dwarf Pears—their economy, durability, etc. Although we have already discussed the subject at some length, yet from the position of Col. WILDER, and his reputation as a pomologist, we shall publish it entire in our April number, promising our readers a rich treat, and much valuable information on the subject.

METEOROLOGICAL TABLE.

Observations made at Farmers' College, College Hill, Hamilton County, Ohio, Latitude 39° 19′, *W. Lon.* 7° 24′ 45″ *for the month of January,* 1857, *by Prof. R. S. Bosworth. Hight of Station above the Sea,* 800 *feet.*

	Barometer, corrected for temperature & capillarity.				Open air thermometer.				Clouds—course & velocity.						Wind—direction & force.			Rain & melted snow.		
	7 A. M	2 P. M	9 P. M	Mean.	7 A. M	2 P. M	9 P. M	Mean.	7 A. M.		2 P. M.		9 P. M.		7. A. M.	2 P. M.	9 P. M.	Hour Began.	Hour Ended.	Am't Inch.
1	29.208	29.158	29.131	29.166	11.0	28.0	28.0	22.3	1	0			10	Nim.	N. W. 2	0	S. E. 1			
2	28.986	28.903	28.815	28.901	27.0	37.5	33.0	32.5	10	Nim.	10	S.W. 2	10	Nim.	S. E. 1	S. 1	0	4 P. M.		
3	28.989	29.178	29.357	29.141	15.5	13.0	9.0	12.7	10	N.W.4	9	N.W.5	10	Nim.	N. W. 5	N. W. 5	N. W. 1		8 A. M.	0.050
4	29.421	29.344	29.324	29.363	1.0	22.0	16.0	13.0	0	0	8	0	10	W. 6	0	0	0			
5	29.278	29.175	29.265	29.239	17.0	32.0	23.0	24.0	10	0	10	0	10	0	0	0	N. W. 1			
6	29.380	29.416	29.467	29.421	16.0	25.5	17.0	19.5	5	N.E. 3	7		9	Haze.	0	N. E. 1	0			
7	29.482	29.482	29.555	29.506	15.0	18.0	10.0	14.3	4	N.W.5	0	0	0	0	N. W. 3	N. W. 2	N. 1			
8	29.648	29.534	29.465	29.549	3.5	18.5	10.0	10.6	4	N. 1	2	Cirri.	0	0	N. W. 1	0	N. W. 1			
9	29.328	29.194	29.059	29.194	6.5	26.5	27.0	20.6	0	0	0	0	10	S.W. 4	S. 1	S. W. 1	0			
10	28.811	28.766	28.930	28.836	24.5	29.0	19.0	24.2	10	S. 4	10		10	N.W.	S. W. 2	W. 3	WNW. 4	4 P. M.	9 P. M.	0.075
11	29.076	29.201	29.329	29.202	21.5	23.0	9.0	17.8	10	N.W.5	4	N.W.1	0	0	WNW. 5	N. W. 3	0	10 A.M.	12 M.	0.100
12	29.366	29.248	29.161	29.258	-2.0	23.0	11.0	10.6	0	0	0	0	1	Cirri.	0	0	0			
13	29.006	28.970	29.030	29.002	11.0	28.0	13.0	17.3	0	0	0	0	2	Cirri.	S. 1	S. W. 1	0		in night	
14	28.979	28.895	29.040	28.971	13.0	31.0	22.0	22.0	10	S. 4	10	S. 2	10	S. 1	S. 1	S. W. 1	S. W. 1	5 A. M.		
15	29.278	29.480	29.564	29.441	17.0	19.0	4.0	13.3	10	W. 5	0	0	0	0	W. 2	N. 2	N. 1		10 A. M.	0.150
16	29.433	29.194	29.170	29.266	9.5	32.0	25.0	22.2	10		10		10	S. W.	0	S. 2	S. W. 2			
17	29.141	29.281	29.280	29.234	23.0	23.0	15.0	20.3	10	W.	10	N.W.3	10	N.	W. 2	N. W. 2	N. W. 4	6 P. M.	In Night.	0.050
18	29.366	29.351	29.398	29.335	-0.5	6.0	-1.0	1.5	4	0	0	0	0	0	N. E. 4	NNE. 5	N. E. 2			
19	29.419	29.310	29.270	29.333	-9.0	12.0	3.0	2.0	0	0	0	0	0	0	N. W. 1	WNW. 1	0			
20	29.06[illegible]	28.896	28.900	28.953	12.0	29.0	25.0	22.0	9	S.W.	10	S. W.	10	Nim.	S. W. 5	S. W. 5	S. W. 6	2½ P.M.	5 P. M.	0.250
21	29.161	29.227	29.312	29.233	2.0	7.0	-3.0	2.0	4	Strat.	0	0	0	0	W. 4	N. W. 3	N. W. 5			
22	29.369	29.362	29.413	29.381	-14.[illegible]	0.0	-7.5	-7.2	5	Cirri,	2	0	0	0	W. 1	N. W. 2	N. W. 3			

23	29.457	29.400	29.367	29.408	-18.0	5.0	0.0	-4.3	2	0		Smoky		Haze.	0	S. W. 1	0			
24	29.216	29.200	29.327	29.248	5.5	21.0	16.0	14.0	10	0	10	0			S. W. 1	WSW. 5	WSW. 1			
25	29.502	29.552	29.559	29.536	3.0	19.0	12.5	11.5	2	Cirri.	4	W. 1	10		N. W. 1	0	0			
26	29.370	29.175	29.148	29.231	15.0	34.5	42.0	30.5	10	S.W. 8	10	S.W. 2	10	S. W.	S. W. 1	S. W. 1	S. 2	10 A. M.	In Night.	.360
27	29.185	29.357	29.437	29.326	42.0	38.0	34.0	38.0	10	W. 5	4	N.W.5	0	0	W. 1	N. W 2	N. W. 1			
28	29.365	29.274	29.264	29.301	27.0	38.0	26.0	30.3	10	N.E. 4	10	Strat.	0	0	N. E. 3	0	0			
29	29.330	29.307	29.302	29.313	19.0	37.0	30.0	28.7	0	0	0	0	0	0	0	0	0			
30	29.214	28.975	28.870	29.020	35.0	41.0	31.5	35.8	1	Cirri.	10	Haze.	10		ENE. 1	ESE. 1	ESE. 2	6 P. M.	In Night.	0.350
31	28.775	28.795	28.975	28.849	32.0	39.0	19.5	30.2	10	Nim.	2	S.W. 8	0	0	S. W. 1	S. W. 4	N. W. 3			
Sums.				906.167				576.0												1.385
Means.				29.231				18.6												

REMARKS ON WEATHER.

3. Half inch of snow fell last night.
10. ¾ inch snow.
11. 1 inch do.
15. Snow squalls during day 1½ inch.
17. ½ inch snow.
19. A flash like lightning from a distant thunder cloud in the W., at 8 P. M.—perhaps from a distant meteor.
20. 2 inches snow.
24. A few flakes snow this A. M., and at 3 P. M.
30. 3½ inches snow.
31. A slight misty rain this morn.

REMARKS. — Although a very cold January it averages one degree higher than January of last year. The Barometer has had a higher average range than for any month previously reported.

EXPLANATION.—The state of the sky is indicated in this table by numbers from 0 to 10; 0 signifies perfectly clear sky, 10 that it is entirely covered with clouds, and intermediate numbers show the number of tenths clouded. The direction from which the wind blows is shown in the initials of the points of the compass. Its force is indicated by numbers; 0 meaning a perfect calm, and 10 the most violent hurricane.

MONTHLY EXTREMES.

	MAXIMA.				MINIMA.			
	7 A. M.	2 P. M.	9 P. M.	Month.	7 A. M.	2 P. M.	9 P. M.	Month.
Barometer, . . .	8th. 29.648	25th. 29.552	15th. 29.564	29.648	21st. 28.775	10th. 28.766	2nd. 28.815	28.766
Thermometer, . .	27th. 42.0	30th. 40.0	26th. 42.0	42.0	23d. -18.0	22nd. 0.0	22nd. -7.5	-18.0

TO PARENTS AND MECHANICS.

THERE are but few families that have not one or more members who possess a taste for science, art, or mechanics. To the parents of such, we have a few words to say. Such tastes are noble, because they afford evidence of a thirst for useful knowledge, and as 'knowledge is power,' they should be fostered and cultivated. The reading and study of works of an elementary character are necessary for this purpose, but these are not sufficient; those who have such tastes must also study periodicals devoted to the propagation of information relating to inventions, discoveries and improvements. The public mind is so active at the present day, and art and science move on and progress with such rapid strides, that it is positively necessary to employ means of this character to keep posted up in current information. Many publications contain much that excites the passions and oftentimes imparts to them a wrong bias; but science appeals only to the intellect and the judgment, and its influence must therefore be elevating to every mind that pursues it. Is not this a powerful reason why every family should welcome a scientific publication and make it a household companion? Our country is a young giant; its growth in material greatness is a modern miracle among nations. It presents more openings for young men to rise to renown and wealth than any other nation. Every mechanic who acquires a master skill of his business, coupled with intelligence and scientific knowledge, is sure to rise to distinction—he lacks knowledge, and is therefore deficient in power to do so.

Young mechanics! yours is the time of life to devote to the acquisition of positive knowledge, before the cares of the world absorb all your time in providing the means of a bare subsistence.

A young mechanic should learn to be a good draughtsman; his mind should be imbued with sound scientific information; he should be posted up in the progress of science; and he should be able to write and express his opinions freely and correctly. He should have a manly ambition to be intelligent in all that relates to his profession: for those who have no such ambition never can rise to be good mechanics or good citizens.—*Hunt's Magazine.*

POLYTECHNIC HALL, COLLEGE HILL, OHIO.—See Page 188.

THE CINCINNATUS.

VOL. II. APRIL 1, 1857. NO. 4.

THE STEM—STRICTURES UPON VIEWS ENTERTAINED.

RESUMING our physiological analysis of the plant, we consider next in order, that part called the stem; noting, as we have done before in regard to the root, briefly some of its more important characteristics, functions, etc.

Plants differ from minerals in being organized bodies, possessed of a degree and kind of life, capable of taking into their system extraneous matters, and converting these, by an assimilating process, into new compounds, thereby rendering them subservient to their growth and development. The laws regulating plant life, differ essentially from those characteristic either of the mineral or animal kingdom. On examination of the plant we find it made up of cells, fibers, tubes, and membranes, which unite to form distinct parts and organs.

The stem is that part of a tree whether placed in earth or in air, which, commencing between the cotyledonous lobes, proceeds from a fixed point upward, in an opposite direction from the root, and therefore called the ascending axis. Its appropriate elements are light and air, and the gases pervading them, just as the soil and its ingredients contain the proper aliment for the roots which as invariably descend and which are therefore denominated the descending axis. As the formation and functions of these parts of the plant are entirely different, and seek from different sources their respective elements, the laws regulating their proper increase and development can not be violated with impunity.

There are certain points generally occurring symmetrically along the stem, at which leaf buds, and subsequently branches appear.

These buds are called *nodes,* and the spaces between them, *internodes.* The stem then may again be defined as a successive development of leaf buds, in a longitudinal and lateral direction.

Stems receive different names, according to the nature and character of the plant. In ordinary herbaceous plants, the stem is called *caulis;* in trees, *truncus;* in shrubs, *caudex;* in grasses, *culm;* in palms and ferns, *stipe.*

When the stem is woody, and continues to increase indefinitely, we have either trees or shrubs; trees when there is but one stem, shrubs when there are several stems, mostly of equal size, springing up together from the ground. It is the ligneous stem to which we would chiefly direct our attention. As to external forms and characteristics, in some plants the stems are cylindrical; in others, compressed; in others, quadrangular; solid in some, tubular in others, and jointed or knotted in others; naked in some, and leafy in others; simple in some, and compound and branched in others; robust in some, and slender in others; upright in some, nodding in others, and decumbent in others; rigid in some, and flexuous in others; self-supported in some, climbing in others, and creeping in others.

Stems with respect to structure are either *exogenous,* viz.: increasing indefinitely by layers upon the outside, as in most ligneous stems, or *endogenous,* when the bundles of vascular tissue are produced in definite fasciculi, converging toward the interior, all additions being constantly made within, as in the cornstalk. The *acrogenous* in which the vascular bundles are all developed simultaneously, and not in succession, the elongation of the stem depending on the union of the bases of the leaves, or the petioles, and the extension of the growing point or summit. These are the principal distinctions. In our further remarks, we shall confine ourselves to the exogenous or dicotoledonous stem, the type of most trees in the temperate climate, embracing both the cellular and vascular systems; the cellular system consisting of the outer bark, the medullary raps and the pith; the vascular, the inner bark, the woody layers, and the medullary sheath. Some persons in discussing vegetable physiology would range all nature in search of what the ancients vainly attempted to find, *a universal principle of things;* not recognizing the fact that every order, every class, every genus, every species, has its own nature and its own laws. He who would attempt to simplify where nature has not, will introduce only confusion, and darken council by words without knowledge.

In the earlier stages of growth in the young exogen, its structure is entirely cellular; after a short time we perceive wedge-shaped bundles, edges of which point toward a common center, arranged around a central cellular mass, called pith, which is connected with the outer bark by means of cellular processes called medullary rays. At first the pith is large, the medullary rays, also, are of considerable thickness. Subsequently, by the increase of the old formations, and the development of new ones between them, the medullary rays become more restricted. Such is the young tree during the first year; at the end of the second year, the shoot is found to have increased in diameter, by the foundation of a zone of vessels consisting of porous and woody tissue, and a zone of fibrous bark, the medullary rays still continuing outwards. Thus the young tree is yearly increased, one layer or zone after another. We will here briefly notice functionally, these several parts. First, the medullary tube, occupying the center of the stem and lining the innermost layer of the wood containing the pith. Its walls are formed of long parallel vessels disposed longitudinally. The pith, or central portion, consists of a cellular tissue, the cells diminishing toward the circumference. The pith is generally of a greenish color at first, and full of fluid; subsequently this disappears, leaving a light colored, spongy, dry mass. The office of the pith is not fully understood, but is supposed by some to afford nourishment to the young buds, being often filled with dextrine, or starch, convertible into sugar by the process of vegetation. According to the celebrated HALES and DUTROTCHET, the pith performs a very important part in the phenomena of vegetable growth, and the bark and the pith have been generally considered the source of the buds; but the ingenious experiments of Mr. KNIGHT have settled both of these hypotheses, and have established, as far as the present state of science will permit, the doctrine that the buds derive their origin from the albuminous portion of the tree. The alburnous vessels terminating upward, inwardly join the central vessels, which, deriving their origin from the alburnous tubes, convey nutriment, and probably give existence to new buds and leaves. The medullary sheath consists of fibro-vascular or spiral vessels, which sheath includes the pith. A few woody fibers are occasionally intermingled with these spiral vessels. This sheath, according to some physiologists, is in direct communication with the leaf buds, and leaf veins, and carries

up oxygen liberated by the decomposition of carbonic acid, or of water, conducting it into the leaves.

During the first year's growth of an exogen the vascular cylinder, as before observed, consists of an internal layer of spiral vessels, forming the medullary sheath and external bundles of porous and ligneous vessels. Subsequently, the layer of spiral vessels is not repeated, but concentric zones of porous vessels in conjunction with the *parenchyma*,* or cellular tissue, are formed, constituting in the tree the woody circles. Not only the size, but the texture of the woody layers, varies in different parts of the cross section of the stem, which on examination will often be found occasioned by a large and healthy root, for some reason originating on that side of the tree. After a tree has been growing a number of years, we have the distinctions in the wood, duramen and alburnum—or hartwood and sapwood. The vessels being at first open, admitting a ready passage of the juices, ultimately become filled by the deposite of hard fibrous matter, and when thus thickened and compressed, it forms heartwood, which, in consequence of its compactness, is stronger and more durable. Next is the cambium layer, consisting of a semifluid, which marks the separation between the wood and the bark. This is an organzable mucilage, and from it new elementary portions are formed, both of vascular and cellular tissues. Next is the cortex or bark external to the wood, which is a protection to these formatory processes going on between the wood and itself, and consists of several layers. And first there is a cellular tissue which subsequently undergoes changes as successive deposites are made, which thus, by these deposites, passes into a vascular layer. Here we have then connected with the bark as with the wood-zones, a cellular and vascular system, the position and relative proportions of the elements varying in the two. In the bark the cellular system is external and much developed; in the wood it is internal and restricted. The increase of bark takes place in a manner directly opposite to that of the wood. In the wood the successive layers are developed on the outside, in the bark on the inside. Hence we see, as the tree increases in size, the outer layers of bark often become so distended as to crack, and often peal off; in other cases, as in the beech, they retain their position, but become extremely porous.

*This cellular tissue has a fine green color in the bark of the stem and branches, but is colorless in the bark of the root.

With this brief analysis of what might be called a common exogenous stem, passing by many anomalous appearances and marked characteristics, interesting chiefly to scientific observers, we would proceed to notice more practically some particulars in relation to the stem and its appendages, leaving entirely the circulation to be considered in a separate article.

BUDS, BRANCHES, ETC.

From the buds formed along the ascending axis branches are developed, thus forming a head or crown to the tree; these branches in organic structure and physiological construction, are the same as those of the stem, they originate in a bud, and form a cone that consists of pith, wood and bark, or rather they form a double cone, not as was recently stated by Prof. WARD in our Horticultural Society, by growing down into the trunk of the parent stem, but the apex of the inserted cone starts from a bud upon that zone of the tree upon which said bud originates, and as layer after layer intervenes, each successively falling short of the preceding, on account of the growth of the branch, a cone is formed, the circumference of the branch at its junction with the tree being its base. This insertion, thus effected entirely by the successive outer growth, gives the branch the appearance of burying itself like a root in the stem. This conical apex is never carried any nearer the center of the tree than at the period of its first formation, and the inserted portion is elongated only in consequence of the accumulation of the new layers, by which the diameter of the trunk is increased. In its width it increases like the external portion, by the addition of new layers pervading the alburnum of the trunk, to which it is intimately united by the intermixture of their respective fibers forming a firm and compact knot. Hence, although the trunk is to the branches, what the soil is to the plant, we can not regard this inserted cone in the light of a root, because the trunk, branches and branchlets, to the last twig, receive unitedly their nourishment from the roots, rootlets, and spongioles, belonging to the inferior or descending axis. Let the roots be destroyed or mutilated, and the entire tree perishes or droops.

Here we emphatically enter our protest to a theory held forth by physiologists, and recently advocated by Prof. WARD, before our Society, that a bud contains an *embryon*, or perfect plant, as much so as that contained in the seed, and that a tree formed from a bud,

or branch, inserted in a quince stalk, or layer, forms as perfect a tree as one inserted in a tree or root from a seed—that said bud or branch will develop a descending axis as perfect as a seed—that the bud plant and the seed plant are synonyms. Now, however freqently the assertion may be made, or whatever form it takes, or proofs are adduced from the lower order of plants, in support of such theory, I shall regard the doctrine most unsound, and one that leads to a most pernicious practice. All that can be said, is, that a branch *may be made to develop roots,* if planted under favorable circumstances—it has been done, it can be done, it is done.

All this is admitted, and this must be the beginning, middle and end of the argument urged by physiologists. If there is any thing more cogent, we have been unable to find it. That you have by such process of propagation a true phyton, we deny, and challenge the proof. What are some of the sublime conclusions from this sublime law of vegetation by which it is asserted that every bud contains a phyton, a young embryon as perfect as in the seed? Hear them—one is that every branch, branchlet and tender little twig, are so many independent trees inserted, or growing, if you please, within each other, all supported by their great-great-grandfather down to the fiftieth generation, if the tree be so old—that an independent forest waves in majesty and grandeur upon the stem of yonder oak, all deriving support and nourishment each from its predecessor, as so many distinct and perfect trees: and that all you have got to do is to lop a branch or leaf-bud with its accompanying twig, from any tree, and stick it into the ground; or if that wont do, increase the heat, and thereby develop as perfect a tree as that obtained from seed. As before stated, I regard this whole theory, however poetical and beautiful, as unsound; and while it is not new but hoary with age, it may be regarded as irreverent to pluck *at*, if we are not able to pluck *out*, any of its gray hairs.

Let us then examine the premises, for if we can there find a defect, as in the tree from the bud, the argument, like the tree, will be found to lack a very essential part. First, take a normal plant, one developed from the seed, compare it with the bud or branch plant, as likewise the plant developed from the root, usually called a sprout. Do you find any difference? No, says the superficial observer, they both have roots. True, but is there no difference in roots? Find upon your sprout, or your layer, anything answering to a regular descending axis. You may resort to your bulbs and creeping plants,

to the strawberry and the grasses, and confuse yourself, and perhaps confound your opponent, if he will admit that nature has but a single type, and in relation to that type all laws are uniform—which position is simply absurd; but if you will search among dicotyledonous trees, you may take one hundred thousand, and while you will not find a seedling without a descending axis, unless it has been destroyed in germination, you may take a like number of cuttings, layers, or sprouts, and you will not find one that has such descending axis. You will find in these latter, great diversity; but amidst it all, they are destitute of this important natural appendage. What is the design of nature, in the seed? manifestly, reproduction. What of the bud? a continuance and extension of growth of the individual plant, in conforming with a co-ordinate law of the root and rootlet, answering to it and supporting it. And while we are aware of the fact that the bud may be made to assume an independent position, and grow apart from the parent stem, we will not admit that this bud can be made, or ever was made, to produce a true phyton. We assert then, that every tree formed from a branch or layer, as every tree formed from a forced bud along a root or rootlet, is abnormal. Every bud and branch that by any means may be made to develop roots, does it on the principle of accommodation. It is not a natural operation, it is forced. Every root proceeding from such bud or branch is adventitious. You may force roots from the cambium layer of such plants, from any portion of the internode. Who will say such roots are in embryo in this cambium layer, in perfection, as the root situated between the cotyledonous buds, which may be distinctly seen by the microscope? Every root proceeding from such branch is adventitious and abnormal. You say nature has provided here a treasury for reproduction, that no plant or tree shall be lost. This is all beautiful, but it is all poetry. Nature's great treasure-house is in her seeds; here she provides an ample store against all contingencies. The great source of improvement is here also. She gives you only hints in the light of exceptions in propagating from her buds. This practice is essentially man's device. True she has by this operation in effect said, if the seed be lost, or you have an excellent variety of a species you may desire to retain *intact*, you may thus preserve it, yet you may the better do this by ingrafting or budding upon healthy seedlings, and thus arrest the more rapid degeneracy incurred by propagating from layers. You may thus multiply your Bellefleur, your Golden Russet; but if

you want any thing better than these in their respective characteristics, you must resort to nature's great treasure-house—the seed. You can only in this way preserve your variety; and truly this is by no means an unimportant art, but one we trust that will become more and more prevalent; and thus we will retain all the good varieties we secure, and by crossing these good varieties by hybridization and planting the seeds, increase their number and greatly enhance their present excellencies.

Now, the truth is, every seed of a dicotyledonous tree contains an embryo of a young plant within it; a phyton, perfect in plumule and root. It is quickened into life with no unnatural effort; when moisture and a proper degree of heat is admitted, it first pushes or elongates its inferior axis into the soil. this axis can be made to move in no other direction, after feeding upon the pericarp, until it reaches its own proper element, and is prepared to perform its own proper functions, it starts into action the plumule in the opposite direction, into the light and air and warmth suited to *its* proper development. As the plumule ascends, the root by little increments descends. As the plumule demands nourishment, the root enlarges and supplies it; while the buds and branches are developed, and revel in their own proper elements, performing their own appropriate functions, of decomposing, digesting and distributing, the corresponding roots and spongioles are doing their part in furnishing a sufficient supply of the raw material. Here then, is the ascending axis with its nodes and internodes, maintaining a *proper equilibrium* throughout the year; indeed, *throughout the period of its existence*, with its downward and descending axis, with *its* corresponding ramifications. The one eating and drinking from dame nature's bosom; the other digesting the food received, and supplying every part—roots, branches, leaves and fruit,—with means of substantial growth and maturity. If nature is parsimonious, or the market stringent by reason of drought, and can not feed the roots—her workmen—they must be content to do a less prosperous business. Thus we see the root and the branches are dependent on each other, and preserve an equilibrium and correspondence with each other, thus showing that the tree is essentially in itself a unit—not many individuals in one. No more can it be said there are many individuals in the ascending than there are in the descending axis—in the stem than in the roots. If you take from a tree a bud or branch, you have essentially and truly the ascending axis—the stem of a plant—nothing

more; you have no descending axis; in being separated from the the tree it left its descending axis in the parent tree. When you remove this bud or branch you put nature upon a new work—upon the work of developing roots. She pauses some time before she consents, and frequently she refuses. She uniformly waits until she calouses the stem, often demanding extra assistance by heat and other means, before she can so far gain strength to force out from her cambium layer, lateral roots, which placed under favorable circumstances will continue to grow, and at length evolve branches from branches, as the parent root did, only in a more enfeebled and crippled condition.

In most plants nature utterly refuses compliance with your demands. This is the case with almost all resinous sapped trees. Some trees—and there are exceptions to the general rule—will when properly treated, send out vigorous laterals, adventitious abnormal or forced roots, never, properly speaking, a full perfectly formed descending axis, such as is attached to a seedling plant. You may likewise cause the root to develop plumules, as you often see in the numerous sprouts springing from the oft-lacerated, broken or bruised roots, of thriftily growing trees; having when thus broken and bruised, an over supply of the descending current, thereby forcing out buds and branches which would not have been developed. These buds feeding upon the cambium layer, throw up their plumules, forming upon the root an abnormal tree, a tree not to be trusted, a tree, indeed, inferior to that from a bud or branch of the ascending axis. This, then, is our position, *that neither class of trees*, viz.: *those formed by layers, or those formed upon roots, have, or can be made to have, a regular descendiny axis or tap root*, which is regarded by many as a mere useless appendage, fit only to be truncated and thrown away, and which is recommended by some cultivators high in authority; and the question was gravely propounded to us in the Horticultural Society, whether a tree with its tap root cut off, was not placed on like condition thereby with a layer. We might answer this question by asking another—whether it will result in the same thing to cut off a bit of a dog's tail, or inflict the blow just behind his ears? Your tree with its tap root cut off, is simply *curtailed*. I know the analogy is not complete, but it shows most clearly that there would be a great difference between truncating a portion of the root, and cutting above the point of emanation of the ascending axis. As long as there is any portion of the descending axis

left, nature sets about supplying the deficiency, as she does in lopping off any part of the ascending axis.

It is, then, by reproduction, by natural generation from seed, not by propagation, that we must look to preserve plants in their vigor, strength, and functuous power; and it is by proper hibridization that we may expect yet untold results—that is crossing our very best fruits, and then planting the seeds from such impregnation. Plants propagated by layers from generation to generation, will run out, as it is familiarly termed. Even by grafting constantly from the same variety, although the grafts be placed upon healthy seedling stocks, the tendency without doubt is to deterioration. The sugar cane of the South which has been propagated for generations by layers, does not now yield, under the most favorable circumstances, as formerly, doubtless from this very cause.

The motive powers of plants are thus enfeebled. Nature's laws have been repeatedly violated, and the penalty inflicted in the form of a slow atrophy, scarcely perceptible at short intervals, is none the less sure.

Closely connected with this subject are the practical operations of pruning, root and top; grafting and budding, as well as those of propagating from cuttings, layers, sprouts, etc., which latter have been abundantly discussed above, as well as in the numerous articles on Dwarf Pear Culture, pro and con, which we have recently admitted freely to our pages.

PRUNING.

This is an operation that can not be properly and successfully performed without a knowledge of the physiology and habits of the plants, whatever they be, and consequently should be executed with precision and care. No common work-hand should be entrusted with this operation until after working some time under instructions. Indeed, no one can prune properly without some experience, or placing himself under the direction, for a time, of one skilled in such manipulation. If we assume that a certain amount of nourishment is supplied by the roots to all the buds and branches of a tree, by cutting off one half of the branches at the proper season, we direct the whole supply of nourishment to the remaining portion, which will consequently grow with nearly double their former luxuriance. When a tree is removed from one position to another, even with the greatest care, you do violence to a greater or less extent to

the roots, on which account you trim freely, knowing you can not replace the tree in such a manner as that its roots shall be able to start into luxuriant growth its former number of buds. Again, when from the leanness of the soil or other cause, a tree becomes stunted or enfeebled in growth—the quantity of cambium manufactured being small—and both the upward and downward circulation become sluggish, by leading back, or pruning judiciously, all the force of the nourishing fluid is thrown into a smaller number of buds, which consequently develop new and more luxuriant shoots, larger sap vessels, which afford a ready passage to the fluids, and the tree is thereby renewed in its energies and fructuous power. Old trees should not be pruned, as they often are, after having been neglected, by lopping off large branches almost indiscriminately, which is sure to be disastrous, but should be headed back, and the roots assisted at the same time with a good top dressing. A judicious pruning to modify the form of our standard trees, is all that is required in ordinary practice. Every fruit tree grown in the open orchard as a standard, should be allowed to take its natural form, the whole efforts of the pruner going no further than to remove all weak and crowded branches; those which are filling uselessly the interior of the tree, where the leaves can not be duly exposed to the air, light and sun, should be removed, giving a fine open top to the tree. Where pruning is not required to renovate the vigor, or regulate the shape of a tree, it may be considered worse than useless, bearing in mind that growth is always corresponding to the action of the leaves and branches, if these are in due proportion and in perfect health, and that the knife will always be detrimental to luxuriance and constitutional vigor. Ignorant cultivators frequently weaken the energies of young trees, and cause them to grow up with lean and slender stems, by injudiciously trimming off the young side shoots. By taking off these shoots, the stem is deprived of all the leaves which would elaborate the sap furnished by the roots, thus dwarfing materially the energies of the tree, which will soon be seen by its feeble and slender growth.

Horticulturists differ widely as to the proper time of pruning, and simply from the fact that it can be done with profit almost any time when it is needed. The best season for pruning to promote growth, theoretically, is in the autumn soon after the fall of the leaf. Next to this, winter and spring pruning, while the buds are yet in a quiescent state, and this is generally the most convenient season; when

a tree is pruned in autumn and winter, the whole supply of nourishment goes to the remaining branches, while if pruning be done after the sap starts, the nourishment is partly lost.

If we would prune to induce fruitfulness, as we often do when a young tree is too luxuriant, forming few or no blossom buds, it may be done by pinching in the growth during the summer or late in the spring, thus checking its energies in producing wood, and directing them to the forming of fruit buds. This is often successfully done by root pruning, thus cutting off an extra supply of nourishment from the earth.

GRAFTING.

This operation consists of inserting a scion taken from one tree, into the stem of another, in such a manner that they unite, and the inserted scion bears its own fruit. Grafting may be performed in many different ways, some enumerate over forty. The most important points are to apply the inner bark of the stock and of the graft precisely to each other, and to keep them in such position until a union takes place, excluding, during this process, the air and moisture from without. Grafting can only succeed when it is performed between vegetating parts. Thus, wood can not be grafted, nor even alburnum. Grafting, or union of plants, can take place only between plants of the same species, species of the same genera, or lastly, genera of the same family; never between individuals belonging to different natural orders; for example, the peach may be grafted upon the almond, the apricot on the plum, but the operation would not succeed between the peach and pear. It being necessary that there should be a kind of agreement or similarity between the sap and sap vessels of the two individuals before the union of the graft can be effected. The union is effected through the cambium layers. When the wound of a graft is examined about a fortnight after the operation, a thin layer of small greenish granulations, dispersed in a viscid fluid, may be seen between the two parts that have been brought together. These granulations—the rudiments of vegetable organization—are produced by the cambium which becomes solidified and organized. Of the various modes of grafting and their peculiar advantages, they are so well understood as not to demand here a description. Besides, mere descriptions never answer the purpose; grafting is a mechanical operation, and must be performed under instructions to succeed. Tongue grafting, or whip grafting,

as it is sometimes called, is best when the stocks are small. Cleft, when they are sufficiently large to bind a graft. Crown grafting, saddle grafting, side grafting, grafting by approach and inarching, all have their peculiar advantages under given circumstances. If you would succeed in grafting stone fruit, it is necessary on account of the peculiar structure of the bud, to observe a little more narrowly certain points. First, you must graft when vegetation is entirely dormant, if you would succeed. It will be observed that the buds of the peach, plum, cherry, apricot, etc., are more prominent than those of seed fruit, the germ has a delicate neck standing out from the footstalk, which when once started, can not suffer the least interruption, and if then taken, withers; or if the flow of sap is free in the stalk, is easily surfeited. Not so with the bud from the apple or pear, it lies close to the sheath of bark which will supply with food for days of itself, or until nature has time to recuperate and furnish it food from a natural flow. We have grafted cherries in mid winter, when our hands were nearly frozen with cold, with the best success. You need not fear if it is properly done that the frost will injure; it is not the case. You may thus graft your old cherry trees as well as your old pear and apple trees. Never destroy old healthy trees, they will furnish you a rich reward by grafting them, many years before your young trees will come forward. An old apple tree, a thrifty seedling, well established, is worth twenty-five dollars at least, and will pay the entire interest, and pay for grafting after the second year. One of the great advantages of grafting, is, that of being able to appropriate the entire vigor of an old established plant, and if properly done, really to rejuvenate it for your immediate use. If this is effected on an old apple or cherry tree, you should go well out upon the branch to a point of suitable size, say from three quarters to an inch in diameter, and cut away the entire top the same year. I know there is a different theory, but it is erroneous. Keep off all shoots until the grafts are well started, and then you may leave them until the next spring, when you should be doubly careful to prune them off and keep them off, cutting back well your grafts. If you will adopt this course, you will have a beautiful and symmetrical top by the end of the second year, and perhaps some fruit. Budding is another operation belonging to this connection; but as before stated, it is familiar to most, and is best understood by instruction given by examples. It, as grafting, is an easy and simple art that may be learned in ten minutes; to be expert, requires considerable practice. Ed.

HOW TO PLANT AND SUBSEQUENTLY TREAT PEACH TREES.

THE peach tree, even within our own recollection, was one of the most healthy and vigorous trees of this part of the country. They might be called almost a spontaneous production, appearing uncultivated in almost every fence-corner, and almost yearly yielding a crop of fruit. *And such peaches!* The very conception makes our mouth water. I have often thought of the wagon loads carried to the distillery to save them. We then knew nothing about names and cared less, for the natural fruit surpassed in size and flavor any which we now have. But their glory is strangely departed, and the question is, why this death and how we are best enabled to accommodate ourselves to present circumstances, and secure the best reward for our labor. Some have thought and asserted that it was from change in climate, that the peach will not now thrive as formerly. This is not the fact. If there has been a change, the thermometer does not show it. We have the thermometrical tables since the year 1814, and have the observations recorded in relation to this very fruit. The winters are not more severe, but from the enfeebled constitution of the tree from various causes, it is less able to endure our winters, and sustain a severe freeze without injury ; just as an enfeebled constitution suffers from these March winds that once were endured without sensible effects. Now, the simple cause is from the rascally worm preying upon the stem in its most vulnerable point. This worm made its first appearance in the neighborhood of Cincinnati, in the year 1826, and has been devastating and destroying ever since. We remember it well; we had an orchard of six hundred young trees, just ready to bear, embracing the best fruits of the kind in the several periods of ripening from the fourth of July to October, or the time of early frost. These were all destroyed in a single season. As POLLOCK says of his favorite elm, we mourned their loss 'as though a friend had fallen ;' since that time feebleness has been entailed upon the very germ; we have thought within a few years that this *pest*—the worm—has in some measure subsided, that its ravages have been mitigated. But this may be from the better knowledge of its habits, and methods adopted for its extirpation.

It seems now we must eat peaches in the sweat of the brow; in

other words, we must work if we are to enjoy this luscious fruit. We deserve no better treatment, for we were perverting rapidly this boon to the worst of purposes; for a distillery was erected beside every spring, on every other farm, for the manufacture of this fruit into brandy.

PREPARATION OF GROUND, ETC.

First, then, subsoil your ground, unless it be a deep rich new loam, then a deep plowing will be sufficient. Next throw four furrows together where you intend to plant; *back furrow*, as it is called. Plant your trees upon this ridge, doing nothing more than to open holes sufficiently deep simply to cover the roots. If during the first spring and summer after planting, you cover deeper for protection and retention of moisture, do it by drawing up soil that must be removed in the latter part of July. Your trees being thus planted, the next point is to watch and guard against the encroachments of the worm. It must be an unremitted warfare. Nothing will facilitate the ravages of the worm more than to put the stem of the tree into the ground. Therefore keep bare to the roots; and if any worms are found, remove them in the fall, and at the same time wash your tree after this process with strong soap suds. The pouring of hot water around the roots is also good; ashes mixed with a little lime is good.

In the spring go through the same process again. In despite of all efforts, some will escape and more or less injury will be done. To compensate for the weakening occasioned, and to impart vigor to your branches, you must give your roots less to do than is required to start all the buds. It was formerly the doctrine not to prune peach trees when they grew and bore as before described. We have seen trees twenty-five years old, a foot in diameter at the base, that had never been pruned, and as thrifty as a poplar. But this doctrine will not now do. The enfeebled condition of the tree, its stem exhausted by the worm girdling the root, demands that we head in, by cutting off from a third to one-half of the previous year's wood; and when the fruit buds shall pass uninjured as they did two year's since, it will pay to remove two, or even three out of five, of the fruit on the fruit spurs. Those who did not trim their trees or remove fruit year before last, had the mortification of seeing them wither even before ripening their load of fruit. Their hopes were blighted on the very eve of their realization. Now if my readers

are unprepared for all this work, let peach culture alone, unless you want simply to support nurserymen.

You say it will not pay. We answer, and will adduce the proof, that it will pay, and pay better than in the days of their glory. Then men could reap by simply planting, literally without labor. Then, we sold peaches at six cents a bushel, and hauled them to the city on a corduroy turnpike, occupying us, with our ox team, two entire days to perform the pilgrimage.

A fact or two in point in regard to profits. Mr. DAVIS of Clermont County, of peach renown, placed in bank, after paying all expenses, from a single orchard, in one year, twenty-three thousand dollars, and in four years out of seven, made in clean cash fifty thousand dollars. It is true his peach orchard occupied about ninety acres. His success has inspired his neighbors to go and do likewise. It is to be feared that many of them will not observe the same care and attention, 'but they are sure to reap if they *faint not.*'

Mr. JNO LANGHERY, of Hanging Rock, Adams County, has been one of the most successful cultivators. He informed me that year before last he expended upon a peach orchard of eleven acres, in pruning, by shortening in, worming and pushing off fruit, one hundred and eighty days work. He paid all expenses, and pocketed the snug sum of four thousand dollars. That is more money, we venture to assert, than was realized for all the peaches raised in Hamilton county, made into brandy and sold in our market, in those days of peach memory alluded to.

We distinctly remember that we ourselves marketed one year's crop—one thousand bushels—which brought us, after all our labor, one hundred and seventy five dollars.

Our advice is, plant fewer trees, properly attend to their pruning, worming, etc.; and have an abundant supply of this luscious fruit. If all will do this who plant the peach, we would soon at least *lessen* the ravages of this great enemy. ED.

CLINCHING HORSE SHOE NAILS.

As I once passed through this town, one of my horses' shoes became loose, and I went to the shop of a smith named LOVELACE, to get it fastened. The shoe was nearly new, and had become loose in consequence of the nails having drawn out of the hoof, although they had been clinched in the manner universally practiced. The smith remarked that all the other shoes were loose, and would soon drop off, when I requested him to take them off and replace them; and then did I perceive the different mode which he adopted for fixing them, which I will here detail. As fast as he drove the nails, he merely bent the points down to the hoof, without, as is customary, twisting them with the pincers; these he then *drove home*, clinching them against a heavy pair of pincers, which were not made very sharp; and after this had been very carefully done, he twisted off each nail as close as possible to the hoof; the pincers being dull, the nail would hold, so as to get a perfect *twist round* before it separated. These twists were then beaten close to the hoof and filed smooth, but not deep, or with the view to rasp off the twist of the nail. "Oh ho!" said I, "I have learned a lesson in horse-shoeing." "Yes," said he, and a valuable one; if I were ever to lose a single shoe in a long day's hunt, I should have to shut up my shop; my business is to shoe the horses belonging to the hunt, and the loss of a shoe would be the probable ruin of a horse, worth perhaps a thousand pounds; but I never am fearful of such an accident." "Simply because you drive home and clinch the nails before you twist them off," said I. "Yes," replied he, "by which I secure a *rivet* as well as *clinch.*" The thing was as clear as the light of day, and I have several times endeavored to make our shoeing smiths understand it, but they can not see the advantage it would be to *themselves*, and guess, therefore, *it would never do in these parts.* Now, let any one take up an old horse shoe at any of the smith's shops on the road, and examine the clinch of the nails which have drawn out of the hoof, and he will soon perceive how the thing operates. In short, if the nails are driven home before twisting off, and the *rivet* formed by the *twist*, be not afterwards removed by the rasp, I should be glad to be told how the shoe is to come off at all. unless by first cutting out the twist?—*Farmers' Cabinet.*

SCIENTIFIC EXAMINATION IN MURDER CASES.

GREAT facilities are afforded by microscopes, chemical tests, and the rescearches of modern physiology in affirming or disproving circumstantial evidence as to murderers. Dr. H. BURDELL was found stabbed in his own room in this city on the morning of the 29th ult. There was bad feeling existing between him and his house-keeper, and many circumstances fastened suspicion on her and one of the boarders, but science has removed some of what were at first strong indications of guilt. A dagger was found in her drawer faintly stained with blood; these stains are proved by chemical analysis to be rust. A very palpable bloody stain on a blue silk dress, proves to be sugar, or fruit preserves, and blood found on various clothing about the house, is traced to other sources by the same agency. A knife from the place of business of the suspected boarder, and a newspaper found in his room, showed stains which responded to chemical tests for blood and under the microscope showed the blood discs or red globules to be arterial. This will propably weigh somewhat against him.

It will be recollected that in tho investigation which resulted in convicting Dr. WEBSTER of the murder of Dr. PARKMAN, in Boston, the microscope applied to blood on the shoe of the former, disproved his explanation that it was from butcher's meat, by showing the globules, or blood discs to be round instead of longish, or egg formed, as are those of animals.—*Scintific American.*

The last paragraph of the above contains a grave error. The blood discs of all Mammals (that is animals that suckle their young) are round, like those of human blood; with the exception of some of the camel tribe. The mere roundness of the blood discs then would not prove their origin for all our common 'butchers' meat' animals have round discs. Birds and reptiles have oval ones. The musk Deer has the smallest discs; they are only one twelve-thousandth of an inch in diameter. In man they are four times greater diameter, that is about one three-thousandth of an inch in diameter. In birds and reptiles, they are still larger, and in the Proteus (a frog-like animal) they are larger than in any animal yet observed, being a little less than one three-hundreth of an inch in diameter.

It is a very interesting sight to view these globules chasing each other through the veins and arteries, as may be done by placing the web of a frogs foot, or a fishes tail, or mouses ear, under the microscope.

BAYARD TAYLOR'S VISIT TO HUMBOLDT.

FROM Berlin, under date of Nov. 25th., 1856, BAYARD TAYLOR writes the N. Y. *Tribune* the following account of his visit to ALEX. VON HUMBOLDT. He says:

"I came to Berlin, not to visit its museums and galleries, its magnificent streets of lindens, its operas and theaters, not to mingle in the gay life of its streets and saloons, but for the sake of seeing and speaking with the world's greatest living man—ALEXANDER VON HUMBOLDT.

At present, with his great age and universal renown, regarded as a throned monarch in the world of science, his friends have been obliged, perforce, to protect him from the exhaustive homage of his thousands of subjects, and, for his own sake, to make difficult the ways of access to him. The friend and familiar companion of the King, he may be said, equally, to hold his own court, with the privilege, however, of at any time breaking through the formalities which self-defense has rendered necessary.

Some of my works, I knew, had found their way into his hands: I was at the beginning of a journey which would probably lead me through regions which his feet had traversed and his genius illustrated, and it was not merely a natural curiosity that attracted me toward him. I followed the advice of some German friends, and made use of no mediatory influence, but simply dispatched a note to him, stating my name and object, and asking for an interview.

Three days afterward I received, through the city post, a reply in his own hand, stating that, although he was suffering from a cold which had followed his removal from Potsdam to the capitol, he would willingly receive me, and appointed one o'clock to-day for the visit. I was punctual to the minute, and reached his residence in the Orantenburger-strasse, as the clock struck. While in Berlin, he lives with his servant, SEIFERT, whose name only I found on the door. It was a plain, two-story house, with a dull pink front, and inhabited, like most of the houses in German cities, by two or three families. The bell wire over SEIFERT'S name came from the second story. I pulled; the heavy *porte cochere* opened of itself, and I mounted the steps until I reached a second bell-pull, over a plate inscribed 'ALEXANDER VON HUMBOLDT.'

A stout, square-faced man of about fifty, whom I at once recognized as SEIFERT, opened the door for me. 'Are you here, TAYLOR?' he asked; and added, on my reply: 'His excellency is ready to receive you.' He ushered me into a room filled with stuffed birds and other objects of natural history; then into a large library, which apparently contained the gifts of authors, artists, and men of science. I walked between two long tables heaped with sumptuous folios, to the further door, which opened into the study. Those who have seen the admirable lithograph of HILDEBRAND'S picture, know precisely how the room looks. There was the plain table, the writing desk covered with papers and manuscripts, the little green sofa, and the same maps and pictures on the drab-colored walls. The picture had been so long hanging in my own room at home, that I at once recognized each particular object.

SEIFERT went to an inner door, announced my name, and HUMBOLDT immediately appeared. He came up to me with a heartiness and cordiality which made me feel that I was in the presence of a friend, gave me his hand, and inquired whether we should converse in English or German. 'Your letter,' said he, 'was that of a German, and you must certainly speak the language familiarly; but I am also in the constant habit of using English.' He insisted on my taking one end of the green sofa, observing that he rarely sat upon it himself, then drew up a plain cane-bottomed chair and seated himself beside it, asking me to speak a little louder than usual, as his hearing was not so acute as formerly.

As I looked at the majestic old man, the line of TENNYSON, describing WELLINGTON, came into my mind: 'Oh, good gray head, which all men know.' The first impression made by HUMBOLDT'S face is that of a broad and genial humanity. His massive brow, heavy with the gathered wisdom of nearly a century, bends forward and overhangs his breast like a ripe ear of corn, but as you look below it, a pair of clear blue eyes, almost as bright and steady as a child's, meet your own. In those eyes you read that trust in man, that immortal youth of the heart, which makes the snows of eighty-seven winters lie so lightly upon his head. You trust him utterly at the first glance, and you feel that he will trust you, if you are worthy of it. I had approached him with a natural feeling of reverence, but in five minutes I found that I loved him, and could talk with him as freely as with a friend of my own age. His nose, mouth and chin have the heavy, Teutonic character, whose genuine type always expresses an honest simplicity and directness.

I was most surprised by the youthful character of his face. I knew that he had been frequently indisposed during the present year, and had been told that he was beginning to show the marks of his extreme age; but I should not have suspected him of being over seventy-five. His wrinkles are few and small, and his skin has a smoothness and delicacy rarely seen in old men. His hair, although snow white, is still abundant, his step slow but firm, and his manner active almost to restlessness. He sleeps but four hours out of the twenty-four, reads and replies to his daily train of letters, and suffers no single occurrence of the least interest in any part of the world to escape his attention. I could not perceive that his memory, the first mental faculty to show decay, is at all impaired. He talks rapidly, with the greatest apparent ease, never hesitating for a word, whether in English or German, and in fact, seemed to be unconscious which language he was using, as he changed five or six times in the course of the conversation. He did not remain in his chair more than ten minutes at a time, frequently getting up and walking about the room, now and then pointing to a picture or opening a book to illustrate some remark.

He began by referring to my winter journey into Lapland. 'Why do you choose the winter?' he asked, 'your experience will be very interesting, it is true, but will you not suffer from the severe cold?' 'That remains to be seen,' I answered. 'I have tried all climates except the arctic without the least injury. The last two years of my travels were spent in tropical countries, and now I wish to have the strongest possible contrast.' 'That is quite natural,' he remarked, 'and I can understand how your object to travel must lead you to seek such contrasts; but you must possess a remarkably healthy organization.' 'You doubtless know from your own experience,' I said, 'that nothing preserves a man's vitality like travel.' 'Very true,' he answered, 'if it does not kill at the outset. For my part, I keep my health everywhere, like yourself. During five years in South America and the West Indies, I passed through the midst of black vomit and yellow fever untouched.'

I spoke of my projected visit to Russia, and my desire to traverse the Russian-Tartar provinces of Central Asia. The Kirghiz steppes, he said, were very monotonous; fifty miles gave you the picture of a thousand; but the people were exceedingly interesting. If I desired to go there, I would have no difficulty in passing through them to the Chinese frontier; but the southern provinces

of Siberia, he thought, would best repay me. The scenery among the Altai Mountains was very grand. From his window, in one of the Siberian towns, he had counted eleven peaks covered with eternal snow. The Kirghizes, he added, were among the few races whose habits had remained unchanged for thousands of years, and they had the remarkable peculiarity of combining a monastic with a nomadic life. They were partly Buddhist and partly Mussulman, and their monkish sects followed the different clans in their wanderings, carrying on their devotions in the encampments, inside a sacred circle marked out by spears. He had seen their ceremonies, and was struck with their resemblance to those of the Catholic Church.

Among the objects in his study was a living chameleon, in a box with a glass lid. The animal, which was about six inches long, was lazily dozing on a bed of sand, with a big blue-fly—the unconscious provision for his dinner—perched upon his back. 'He has just been sent to me from Smyrna,' said HUMBOLDT; 'he is very listless and unconcerned in his manner.' Just then the chameleon opened one of his long, tubular eyes, and looked up at us. 'A peculiarity of this animal,' he continued, 'is its power of looking in different directions at the same time. He can turn one eye toward heaven, while the other inspects the earth. There are many clergymen who have the same power.'

After showing me some of HILDEBRAND'S water-color drawings, he returned to his seat and began to converse about American affairs, with which he seemed to be entirely familiar. He spoke with great warmth of Col. FREMONT, whose defeat he profoundly regretted. 'But it is at least a most cheering sign,' he said, 'and an omen of good from your country, that more than half a million of men supported by their votes a man of FREMONT'S character and achievements.'

With regard to BUCHANAN, he said: 'I had occasion to speak of his Ostend Manifesto not long since, in a letter which has been published, and I could not characterize its spirit by any milder term than savage.' He also spoke of our authors, and inquired particularly after WASHINGTON IRVING, whom he had once seen. I told him I had the fortune to know Mr. IRVING, and had seen him not long before leaving New York. 'He must be at least fifty years old,' said he.' 'He is seventy,' I answered, 'but young as ever.' 'Ah!' said he, 'I have lived so long that I have almost lost the conscious-

ness of time. I belong to the age of JEFFERSON and GALLATIN, and I heard of WASHINGTON'S death while traveling in South America.'

He asked me many questions, but did not always wait for an answer, the question itself suggesting some reminiscence, or some thought which he took evident pleasure in expressing. I sat or walked, following his movements an eager listener, and speaking in alternate English and German, until the time which he had granted to me had expired. SEIFERT at length re-appeared, and said to him in a manner at once respectful but familiar, 'It is time,' and I took my leave.

'You have traveled much, and seen many ruins,' said HUMBOLDT, as he gave me his hand again; 'now you have seen one more.' 'Not a ruin,' I could not help replying, 'but a pyramid;' for I pressed the hand which had touched that of FREDERICK the Great, of FORSTER, the companion of Capt. COOK, of KLOPSTOCK and SCHILLER, of PITT, NAPOLEON, JOSEPHINE, the Marshals of the Empire, JEFFERSON, HAMILTON, WISLAND, HERDER, GŒTHE, CUVIER, LA PLATE, GUY LUSSAC, BEETHOVEN, WALTER SCOTT—in short, of every great man whom Europe has produced for three-quarters of a century.

As I was passing out through the cabinet of Natural History, SEIFERT'S voice arrested me. 'I beg your pardon, sir,' said he, 'but do you know what this is?' pointing to the antlers of a Rocky Mountain elk. 'Of course I do, I have helped to eat many of them.' He then pointed out the other specimens, and took me into the library to show me some drawings by his son-in-law, MULEAUSEN, who had accompanied Lieut. WHIPPLE in his expedition to the Rocky Mountains. He also showed me a very elaborate specimen of bead-work, in a gilt frame.

'This,' said he, 'is the work of a Kirghiz princess, who presented it to his Excellency when we were on our journey to Siberia.' 'You accompanied his Excellency then?' I asked. 'Yes,' said he, '*we* were there in '29.' SEIFERT is justly proud of having shared for thirty or forty years the fortunes of his master. There was a ring, and the servant came in to announce a visitor. 'Ah, the Prince YPSILANTI,' said he; 'do n't let him in, do n't let a single soul in, I must go and dress his Excellency. Sir, excuse me—yours, most respectfully,' and therewith he bowed himself out. As I descended to the street, I met Prince YPSILANTI on the stairs.

THE CURRANT.

THERE are no more desirable accessories to the garden than our small fruits, whether cultivated for profit or family use. We have before had something to say on the subject, and recur to it again, not alone for the benefit of our numerous new subscribers, but because Horticultural knowledge, like other kinds of knowledge, is necessarily conveyed by "line upon line, precept upon precept." We shall confine the present article to the Currant. Some may think it needless to give directions for cultivating the currant, since almost everybody who has a garden grows it. But we think not. To *grow* a plant involves the idea of cultivation and care; at least, it includes something more than sticking a plant in a hole, and gathering the fruit in the course of time. If this be true, then probably not more than one in a hundred *grows* the currant; it grows itself, and no thanks to any body. We know of no plant more neglected than this, and we know of none that yields a more generous return for proper care. No fact in Horticultural science is better established, than that high culure is a wise economy. This remark will apply to the currant with peculiar force. It is true, so generous is its nature, it will from year to year produce a moderate crop under very bad treatment; but when judiciously cultivated, the product is wonderfully augmented in quantity, quality and size. In addition to this latter fact, a healthy, well-grown, symmetrical plant, gladsome with its peculiar treasure, always produces an emotion of pleasure in the beholder; a matter of no small moment to those who would extract pleasure even from the sweat of our brow. If, then, additional profit, as well as no small degree of pleasure, will result from the application of skill and care to the treatment of the currant, let it by all means be done. Let it no longer be thrust into a corner, or some other out-of-the-way place, but bring it out into the open air and genial sunshine, and minister properly to its wants. It is almost useless to attempt to bring into shape, vigor and productiveness, old, unsightly, and half-decayed plants. It is better to begin anew. We do not like plants grown from suckers. Procure those grown from cuttings, and remove all the eyes and shoots so as to produce a clean stalk a foot or more high, above which the head should be formed. This stalk must always be kept free from shoots.

Let the ground be trenched a couple of feet deep, and incorporate

with it an abundant supply of well-rotted manure. In planting, remove enough earth to spread the roots out in their natural position, cutting off all that are bruised; and be careful not to plant too deep. Tie the plant to a small stake till it becomes established; thin out the shoots so that a round, open head will be formed; shorten-in all the remaining shoots about two-thirds of their length, and the work of planting will be complete. The subsequent treatment will only become difficult through neglect. An annual pruning is indispensable, which may be done during the winter, or very early in spring, and which consists mainly in shortening-in the last season's growth, leaving about six inches of new wood, and cutting out entirely all branches that cross or interlace each other, so as to keep the head well open and in good shape. Suckers must be eradicated as soon as they make their appearance. Fork in some good old manure in the spring, and keep the ground mellow and free from weeds. If the soil is stiff, the manure may be applied in the fall, and forked in in the spring. If you have done the work thoroughly and skillfully, you may look confidently for an abundant reward.

This article would be incomplete without a list of desirable kinds. The *Red* and *White Dutch* are, on the whole, about the best, and are recommended for the general crop. The *Cherry* is a large and splendid variety, but not very productive. The *White Grape* is also large and handsome. Large *White Provence* is a very large and handsome new variety. May's *Victoria* is late, and a good bearer, with long bunches of fruit. *Prince Albert* is a fine late red variety. *Black Naples* and *Bang Up* are the best black varieties, and are good for jellies. *Knight's Sweet Red* we grew four years before we discovered that the "sweet" was produced by the liberal addition of sugar. The *Long-Bunched Red* is a desirable variety. The list might be extended, but we think the above more than enough; they are the best, so far as our experience goes. We repeat, however, that the Red and White Dutch will give most satisfaction for a general crop.—*American Agriculturist.*

instances I have gathered from the aforsaid trees, "not five or six beautiful pears," *only*, but from one bushel to one barrel per tree. I do further aver, that these trees were originally upon the quince stock—that some of them remain in that condition now, but that most of them have rooted from the pear stock, and that Mr. STOMS may believe that there is "some truth" in this statement, (for "verily, we speak that we do know, and testify that we have seen,") I would really make oath to these facts, were it necessary to convince him of my veracity.

That there may be no misunderstanding of terms, let it be remembered that when I speak of *dwarf* pear trees,—a term which I did not use in the quotation he has cited,—it is in contradistinction to those which are on the pear root; for we of Massachusetts do not allow our pear trees, even those on the quince, to remain *dwarfs* or "monkeys." No, no, Mr. STOMS; we not only make our pear trees grow, *even on the quince*, into beautiful, large pyramids, but we make them bear five to seven years earlier on the quince than they would on the pear stock. And, as to planting deeply, so as to allow the pear stock to root, as many varieties will, it is no "new thing with the intelligent Colonel," for he has *always* practiced this system, a fact well known to his Ohio friends, and to every one who has visited his grounds.

Mr. STOMS asks, "Why graft on the quince stock at all?"

Answer. To obtain "early fruiting," and the pleasure and profit of regular crops, for many years, before the trees would produce fruit on their own stock.

Again he inquires, Will the pear, under the circumstances he (Mr. WILDER) describes, (that is, rooting from the pear stock,) continue to be a "*dwarf?*"

Answer. No; nor do we desire that it should; for, having commenced fruiting and furnished itself with fruit-spurs, it will continue to bear, whether on the pear or quince root, or on both; and, as to "longevity," it is generally admitted that the more roots a tree has, the greater will be its strength, and the longer its duration of life.

Hence we plant the tree deep enough to allow it to root from the pear stock, and thus we keep the quince stock soft and emollient, also, causing it to swell evenly with the pear, and to emit roots throughout its stem, which it will do, if kept below the surface of the soil.

Mr. STOMS further says, "When the friends of Dwarf Pear cul-

ture shall come forward, and with, 'bills of particulars,' show me an orchard of five hundred Dwarf Pear trees, that have been ten years planted, which have borne fruit *successfully* and *paid cost* I will give up the contest."

Now we can not carry our orchards to Ohio, but if friend STOMS will take the cars next August for Boston and advise me of the time and at what depot he shall arrive, I will have a carriage in readiness, take him to my house, have a good chat with him in the evening on Pomology, give him the best bed and board we have, and in the morning he shall see my pear trees and the memorandum of my sales of fruit for the past few years.

I will then take him to my neighbor AUSTIN'S the Treasurer of the Massachusetts Horticultural Society, who has *five hundred and ten pear trees.* All these are on the quince root, with the exception of one or two dozens which are on the pear root; but as these latter have borne but little fruit, Mr. S. will not object to their being counted in the lot. These trees are from eleven to thirteen years of age. One hundred of them are Louise bonne de Jerseys. These trees commenced bearing about three years after planting, have borne regular and abundant crops ever since, and are now in a very vigorous and healthy condition. No account of the crops were kept until the year 1851, but Mr. AUSTIN has kindly furnished me with the amount of his sales since that date.

Sales of pears in		1851,	- - - - - - -	$161,00
"	'	1852,	- - - - - - -	406,00
"	"	1853,	- - - - . - -	731,72
"	'.	1854,	- - - - - - -	630,61
"	"	1855,	- - - - - - -	648,43
"	'	1856,	- - - - - - -	831,00
Total sales for six years,			- - - - - -	$3,408,76

The original cost of these trees was about fifty cents each or $250, (two hundred and fifty dollars). Mr AUSTIN is a merchant, and goes to the city every day, and the only help he has had, is the service of a man who also takes care of his stable and grounds. He has, however, given them his personal attention, and good cultivation, but I think, without further estimate of "*cost*," we may reasonably conclude that these "*five hundred trees*" have "*borne successfully, and paid cost.*" We will then take a ride over to the Messrs. HOVEY'S, where we shall find a much larger number of *pear trees, on the quince root.* Their beautiful avenues are lined with them,

some of which are from fifteen to twenty years of age, but as it will occupy, herhaps, too much time to examine all of them, we will take one walk as an example. How delighted Mr. S. must be to see 220 pear trees, 110 on each side, loaded with their luscious fruit, only eight or nine years planted, and all independently on the quince root. The product of those trees in 1855, was twenty barrels—in 1856 twenty-five barrels. The highest price obtained was twenty dollars per barrel, the lowest eight dollars. Then we can call on Mr. STICKNEY and look at his "*dwarf*" pear trees. We shall see some magnificent specimens of Urbanistes and Louise Bonne de Jerseys. The crop of the latter he sold the last season at ten dollars per bushel. Then we will go to Mr. MANNING'S, who has some pear trees on the quince of very large size, being from thirty to forty years old, and which "still live," and produce annual crops. Then we will pursue our journey and call on Mr. CABOT, the President of the Mass. Horticultural Society, Messrs. BACON, DOWNER, RICHARDSON, JOHNSON, and others who have splendid collections of "*dwarf*" pear trees, which have been "*planted ten years*." By this time Mr. STOMS will be satisfied whether "life to them is a mere shadow and like a brief candle soon goes out;" and having seen thus much of the "*absurdity* of exuberant bearing," perhaps will be able to "*jump* at conclusions *without* practical experience," be willing to "bloviate," "veer round," and without any more allusions to "moonshine theories," and "humbugs," acknowledge that whoever else is to "*back out*," it is not the cultivators of Massachusetts.

As my object has been to bring *practical experience* to bear on this subject, I can not close this article without adding a few extracts from the remarks of the celebrated Mr. BERCKMANS, formerly of Belgium, but now of New Jersey. He has spent a long life in the study of pomology, and his opinions, are therefore, worthy of confidence. To the question, "*Will quince-grafted pears succeed?*" he replies:

"I have no hesitation in replying, Yes, they will, and often better than on pear stock; and they are less subject to blight. I know that I do not agree with the opinions of my late friends, VAN MONS and ESPEREN, who never would admit a quince stock in their experimental gardens. I respect their memory, but can not help considering their opinions as a prejudice. They had not found out the good quince stock, and perhaps did not know how to plant quince-grafted trees. I myself did not know it then. At present, my best

trees are on the quince; and my best fruit also. Those who would successfully cultivate these must pay attention to the following rules:

1. Have a good, substantial, rather deep soil, with porous or drained subsoil.

2. Select the good Angers, or Orleans quince, for stock.

3. Plant no other varieties than those which succeed on the quince.

4. Plant the trees deep enough, so that the place where they have been budded shall be at least three inches below the surface of the soil.

5. Keep the weeds down.

6. Keep the branches low, and make a pyramidal tree, by judicious pruning once or twice a year. If well pruned, the tree requires no pinching.

Much has been said about the *short-living* of the quince stock. If properly planted in genial soil, which is not exhausted or impoverished by intervening field crops without a reasonable supply of manure, as most of our apple orchards are; the quince-grafted tree will thrive for fifty years or more. Some actual facts will prove what I state. Hon. M. P. WILDER has in his garden, in Dorchester, trees which he bought from the widow of Mr. PARMENTIER, Long Island, some twenty years ago. They have yielded fine crops almost every year; and there is no reason to anticipate a diminution of growth or crops. These trees are *on the quince*, but they have been planted by a man who knows how to manage trees.

In the same garden are some fine Urbaniste trees,—a part on the pear, and a part on the quince,—planted in the same spot, in the same year. Those on pear roots, are now beginning to bear some spare fruits, while the others, on quince, have yielded bushels of fruit for the last seven years, and are actually loaded with a splendid crop. All are equally healthy.

He who wants large crops of pears, indifferent in size or quality, may plant all his trees on the pear stock; but he has to wait from ten to fifteen years. If you want large, fine fruit, which, in fact, pays better, with less trouble and expense, select your varieties on the quince. These will often bear the first year, and always the third or fourth from their planting. If I had thirty trees to plant, twenty should be on the quince, the balance on pear stock.

Some varieties will not grow upon the quince, but even these do

well *double worked*, that is, budded or grafted upon a variety worked already upon the quince and succeeding upon it. The French call it *intermediary grafting.*

In planting orchards, the same care and the same digging is required for a standard as for a quince stock, but how different the result? Ask Mr. HOVEY, and others around Boston, from which they derive their largest profits. They all agree that the quince has paid the soil, the expense, tree and all, long before the *pear stock* has shown any sign of bearing.

"*Will quince roots do for orchards?*"

For orchards, as we find them on most of our farms, a promenade ground for cattle, badly cultivated and shallow soil, stagnant water, injudicious selection of varieties, and more injudicious pruning, no, sir! No fruit tree of a refined class, no tree of any value, will do in such conditions.

Let us look at some fine nurseries, or orchards (schools), where specimen trees are cultivated with care, and in proper soil and localities, and facts, those stubborn things, will soon bring conviction in the place of doubts.

Messrs. ELWANGER & BARRY, and others, in Rochester; Mr. WILDER and Mr. HOVEY, near Boston; CHAS. DOWNING, in Newburg; Dr. GRANT, near Peekskill; Mr. REID, Elizabethtown, N. J., and many others, cultivate the pear on the quince stock with the best results.

When one expects to reap the fruit of industry, he needs to give the proper attention to it; if he expects a fruit tree to yield crops of the most refined fruit, and to grow as a maple or a cedar in the woods, he is badly mistaken.

Let the quince stock be abused, we shall do as the philosopher of Greece; when PYTHAGORAS denied *motion*, ZENO went *walking.* Let the quince be slandered, it will remain one of our best friends. Our profits in fruit raising are mostly derived from *quince stock.*— The best fruits of our splendid exhibitions are from the *quince stock.*

Let gentlemen have their own way in stating contradictory experiments, based upon improper or bad management, drawing from these, unsatisfactory conclusions. 'On we shall go,' and by a judicious selection of varieties, and proper cultivation, we shall fill our shelves, and walk among our well-shaped, healthy pyramids with a blessing for the unknown genius who first tried the quince as a

stock for the pear, and made really, in the pear cultivation, the same revolution as steam has done for our traveling."

Well does an editor remark:

"A more satisfactory answer to the tirade of nonsense which is going the rounds of the papers in reference to the cultivation of 'dwarf pears,' viz., the pear upon the quince, could not well be given. It is to the point, and coming, as it does, from one amply able, after many years of observation in France and Belgium, where the pear has so long been cultivated, as well as in our own country, to give an opinion, will have the influence to which its sound common sense entitles it.

"It is one of the most serious drawbacks to all progress in horticultural art, that those who do not know the first principles of a science should attempt to teach those who have made it a life-long study. These attempts to write down the quince stock are a sample of a thousand similar attempts, in the literature of gardening, to assail some of the soundest principles of physiological science and practical art; and it will end, as all similar attempts have, in more thoroughly convincing those who resort to the proper sources of information, how egregiously they have been deceived in following the notions of those who write well enough, or criticise wonderfully wise, but whose practice is as barren as some of the ideas which they attempt to advance."

I also append the following remarks from my address before the American Pomological Society, at Rochester, New York, last September:

"My experience has so often been solicited by private communication in relation to *the pear upon the quince stock*, that I deem it proper to introduce it in this connection, with the reasons on which it is founded. Many varieties of the pear thus grafted grow vigorously, and bear abundantly. I am aware that an impression has prevailed in the minds of some unfavorable to the cultivation of the pear on the quince stock—an impression which must have arisen from an injudicious selection of varieties, or improper cultivation. Pears upon the quince should be planted in a luxuriant, deep soil, and be abundantly supplied with nutriment and good cultivation. They should always be planted deep enough to cover the place where they were grafted, so that the point of junction may be three or four inches below the surface. The pear will then frequently form roots independently of the quince, and thus we combine in the

tree, both early fruiting from the quince, and the strength and longevity of the pear stock. For instance, of trees of the same variety, standing side by side in my own grounds for ten years, and enjoying the same treatment, those on the quince stock have attained a larger size, and have borne for seven years abundant crops, while those upon the pear stock have scarcely yielded a fruit. We have, also, others on the quince, which, twenty-five years since, were obtained at the nursery of Mr. PARMENTIER, where now is the most populous part of the city of Brooklin, N. Y., and which have borne good crops for more than twenty years, and are still productive and healthy.

That the introduction and cultivation of the pear upon the quince has been a great blessing, I entertain no doubt, especially in gardens, and in the suburbs of large towns and cities. And as to its adaptation to the orchard, I see no reason why it should not succeed well, if the soil, selection and cultivation be appropriate. A gentleman in the eastern part of Massachusetts planted in the years 1848 and '49 as many dwarf pear trees as he could set on an acre of land at the distance of eight by twelve feet, and between these rows he planted quince bushes. In the fifth year from planting he gathered one hundred and twenty bushels of pears, and sixty bushels of quinces. Of the former he sold seventy bushels at five to six dollars per bushel, and he now informs me that he has lost only three per cent, of the original trees, and the remainder are in healthful condition."

MARSHALL P. WILDER.

Dorchester, Mass.

RISE AND FALL OF WATER IN LAKE ERIE.

AT a recent meeting of the Cleveland Academy of Natural Sciences, Colonel WHITTLESEY exhibited tables and diagrams of the rise and fall of water in Lake Erie, from the 1796 to 1852, the maximum being in 1838, the minimum in 1819 and '20, the variation being 4.55 feet. Rain guages were kept for various periods in different places in the lake region. He also stated that, by a long course of observation he had discovered the existence of a short pulsating wave in this chain of lakes and entirely independent of winds or currents.

Its altitude does in no case exceed eighteen inches, more commonly four or five. Its periods of vibration are short.—*Scientific American.*

Several years ago when shooting pike one fine April day, we noticed this little tide in Lake Ontario. To follow the sport, we were obliged to wade about among the grass and reeds of a little estuary where the pike (pickerel the people there call them) came up to spawn. We noticed with surprise that about every hour there was a regular tide of some eight or twelve inches in hight, as near as we can now recollect. The day was perfectly clear and calm, one of those Indian summer days that sometimes come in April. This precluded the idea of its being the effect of distant winds. Can any one suggest a cause for this phenomenon?—*Exchange.*

STALL-MANURE AND STRAW.

Ordinary stall-manure is a varying mixture of animal excrements, urine, and straw-litter. It is strong, in proportion to the urinous liquid it has absorbed; weak, in proportion to the small amount of urine and the large quantities of straw it contains. With these circumstances also its greater or less facility of decomposition entirely coincides. Among these ingredients the urine has the greatest tendency to putrefaction and decay, and straw the least; manure rich in urine will, therefore, pass more rapidly into fermentation, and arrive more quickly at what is called "ripeness," than when poor in this constituent.

Fresh manure is, however, no means of nourishment to plants; it becomes so only by what is termed fermentation, that is, by a previous *putrefaction and decay.* The changes which manure undergoes by these processes of disintegration extend chiefly to its organic or combustible constituents; inasmuch as these are transformed into a brownish-black, pulverulent mass, (the well known humus,) while a part becomes at the same time æriform, and escapes into the atmosphere. Coincidently with this, a quantity of water is also evaporated; and from these two volatilizations it is easily understood why fermented manure is of less weight than fresh. If the matter so escaping was exclusively water, this diminution in bulk and in weight would be advantageous and desirable; for the farmer would

thereby save expense in transportation, as he would employ a dryer manure, and would possess in a load which had lost half its weight by desiccation the same fertilizing power that is contained in two equal loads of fresh manure. The true state of matters is, however, wholly different.

Of the proximate constituents of plants two leading classes are distinguished, the combustible (organic,) and incombustible (inorganic;) of these, the first alone are capable of fermentation and putrefaction, the latter not.

Among organic substances a distinction is made between such as contain, and such as do not contain, azote or nitrogen, and the former must be regarded as more scarce and valuable, as well for foddering animals as for manuring plants. Nor is it precisely these azotized constituents that are always first changed; for they introduce and transfer to the other ingredients the putrefactive fermentation, by the intervention of visible and invisible animals of all kinds (infusoria, maggots, worms etc.) If by this means their nitrogen finally enters into a volatile combination, in other words, into ammonia, then it is evident that the farmer who carelessly abandons his stall-manure to the process of putrefaction, will in the generality of cases lose considerable quantities of the manuring elements it contains, and of these elements, precisely those which have the highest value. With the ammonia other volatile combinations of sulphur and phosphorus (sulphureted hydrogen, etc,) are simultaneously generated, and likewise escape in an ærial form. They possess an extremely offensive odor, the same as that of rotten eggs, which is strong in proportion to the putrefactive fermentation. Hence, from the strength of the stench emitted during the putrefaction of animal manure, a tolerably accurate conclusion may be drawn with respect to the loss of strength which may be feared. The maxim of the peasantry, "Whatever stinks is good for manuring," is perfectly true; the more, therefore, stinking gases (containing nitrogen and sulphur) and vapors escape from a dung-heap into the air, the less of course can it continue to retain.

Those parts of plants which contain little or no nitrogen (for instance, straw, wood, sugar, starch,) emit disagreeable odor, during putrefaction; this kind of change is called, by way of distinction, *fermentation*. Animal substances are richest in nitrogen, and among vegetable matter the seed; hence the great difference in the odor, where potatoes, sawdust, sugar, etc., or flesh, cheese peas, etc.,

which have been sprinkled with water, are left standing until they pass into fermentation or putrefaction.

Heat is generated by most chemical processes, and in most considerable degree by those which resemble combustion. Digestion and respiration have been shown to be such processes; so also are putrefaction and decay. For this reason, we perceive a visible and spontaneous evolution of heat, wherever considerable quantities of animal or vegetable matters putrefy, decay, or rot. Hence soil rich in humus (for humus must be considered vegetable fiber undergoing decay or slow combustion) will always preserve a greater amount of warmth than the soil which is poor in this ingredient, and this the more, because on account of its dark color it absorbs a larger proportion of the rays of the sun than a soil of lighter color. The heating of stall-manure is thus explained at once; it will be stronger in proportion to the larger masses heaped on each other, and to the abundance of azotized substances they contain, inasmuch as these latter produce a brisker putrefaction; in the first case, however, the heat is better kept together, and is constantly generated anew, because with increasing temperature the putrefactive process is more energetically carried on.

Next to heat, *air and water* have an essential influence upon the progress of putrid disintegration in organic matter. Substances from which all water has been removed by drying, do not suffer this decomposition, as is exemplified in dried fruits, seeds, leaves, etc., which we can preserve for years, while in a moist state they soon become corrupt. With a moderate degree of moisture, decomposition proceeds most rapidly and successfully. An excessive quantity of water retards it, because when substances are entirly covered with water their heating, and at the same time the access of air, are prevented.

The exclusion or non-exclusion of *air* from fermenting vegetable and animal remains, occasions a great difference in the nature of the decomposition. In the first case, as, for example, in the decomposition of animal manure when piled together in large and compact heaps, and of urine in the drainings' resevoir, in the steeping of flax, in the fermentation of potted cheese, etc., gases and vapors of highly disagreeable odor are generated, which may be regarded as partially consumed substances: they are produced from want of air, or, more accurately speaking, of oxygen. This decomposition is called, simply, *putrefaction*. It has the greatest analogy to charring

or dry distillation, where, as, for example, in the manufacture of common illuminating-gas, or in charcoal piles, from deficiency of air, half-burnt, strong-smelling combinations, tar, ammoniacal gas-water, pyroligneous acid, etc., are likewise generated in large quantity. On the contrary, when the air can freely enter, these offensive gases and vapors combine with more oxygen, and now undergo *complete* putrefaction or combustion; and the products so eliminated are destitute of smell. This kind of decomposition, which is most analagous to complete combustion, and, like this, takes place with abundant air and a proper draught, is called *decay*.

Why putrid drainings and putrid manures, when applied to meadows or fields, diffuse at first a powerful odor but lose this smell a short time afterwards, is therefore very simply explained; they lose their odor, because they can now absorb oxygen in any quantity from the air, and from the process of putrefaction can make a further transition into that of decay.

If moist vegetable or animal tissues lie in a room from which the air is entirely or partially excluded—for instance, in a cellar which has no ventilation, or in a chest, etc.—then in the undisturbed, damp air a decomposition takes place, consisting partly of putrefaction, partly of decay—the well-known process of *moldering*, recognized mainly by its close smell and simultaneous production of mold, fungi, and spongy excrescences. By the addition of water, this kind of decomposition may be converted into putrefaction; by the introduction of a current of air, into decay; or, lastly, it may be brought entirely to a close, if by means of ventilation all moisture is evaporated, and the decaying body becomes completely dry. In common conversation, the words "putrefaction," "moldering," "decay," are deemed synonymous in meaning, and the one or the other of these words is used at the pleasure of the speaker to designate the changes under our consideration. In the majority of cases, it is indeed a matter of indifference, and in a strict sense not at all incorrect, inasmuch as in most decomposing bodies all three processes are of simultaneous occurrence; externally, with free access of air, decay; in the midst, between both, moldering. Here, however, reference must be made to a distinction in these processes, the knowledge of which is important in a practical respect; we mean, the fact that we have to consider putrefying and moldering substances only as a half-prepared or half-finished nutriment for the plants in cultivation; ***decaying substances, on the contrary, as a fully***

prepared or perfected vegetable nutriment. By the putrefaction and moldering of manure its constituent elements are put in training for a brisk decay, but by decay are first transferred to those combinations which are consumed by plants for their nutrition. Putrefaction and moldering may be compared, in this respect, to the soaking, maceration, or parboiling of our food; decay, on the other hand, to its full and finished dressing. Peat is composed of putrefied vegetable organs; pond-mud is equally rich therein; in the same manner, we very frequently find in the subsoil considerable quantities of putrefied or moldering vegetable tissue, for instance, what is called moor-earth, etc. All these substances must notoriously lie a longer or shorter time in the air, before they are serviceable to plants. The transformation they thereby undergo follows from what preceeds; they pass over from a putrefied or rotten state into that of decay.

In arable land the decay of manure can only take place in its upper surface, so far as this is loose and accessible to air. If, therefore, a rapid operation is desirable, it must only be superficially plowed in, especially in heavy soil. The deeper it is introduced into the ground, and consequently excluded from the air, the more tardy and slow must be its decay, and therefore its operation.—STOCKHARDT'S *Chemical Field Lectures.*

CIN'TI HORTICULTURAL SOCIETY—PROCEEDINGS.

SATURDAY, Feb. 14th.

THE Report on the Premium List was ordered to be laid over for two weeks. Mr. SCARBOROUGH'S Resolution to memorialize the Legislature for a law to prevent the destruction of insectivorous birds was adopted.

The special order of the day, the discussion of the points presented in Mr. WARD'S paper, on the "Bud," of last week, was announced; and Mr. CARY proceeded to give an exposition of the phenomena of vegetative development. Mr. CARY paid a compliment to the paper of Mr. WARD as one well calculated to set us to thinking.—He dissented from Mr. WARD'S views in various particulars, and proceeded to present his own, in a manner forcible and agreeable. The postulate of Mr. WARD'S views was, that both the bud and the seed

contained alike perfect independent plants in embryo, synonyms of each other, or, more fully, that the bud like the seed, when placed under favorable circumstances, would *develop an ascending and descending axis*, perfect in all its parts, plumule and branches, roots and rootlets. This theory, though beautiful and poetic he regarded as unsound; nor was it new; and though hoary with age, yet it must not be held irreverent to scrutinize its pretensions. He then examined the function of the seed; it was to *reproduce* its kind; while the office of the bud is to extend the growth of the individual parent plant. He admitted that the bud has the capacity to assume an independent growth, but denied that it can ever be made to produce a true Phyton; and asserted that every tree formed from layer is to be regarded as an abnormal tree, as every tree formed upon a root is an abnormal product; and that every bud, that is made to develop roots, does so on the principle of accomodation; the operation is, therefore, forced and unnatural. We may force roots from the cambium layer of such plants, from any portion of the internodes, but who will presume to say that such roots are in this cambium layer in perfection, as is the root undeveloped between the cotyledonous buds which may be seen by the microscope. Hence he inferred that every root proceeding from such branch is abnormal and adventitious. He maintained that Nature's great treasure-house is in her seeds; hence the expediency of grafting and budding on healthy *seedlings*, in order to arrest the tendency to more rapid degeneracy by propagating from layers. Every seed of a dicotyledonous plant contains an embryon plant within it—a Phyton.

SATURDAY, Feb. 21.

THE President and Vice President being absent, the Society was called to order by the Secretary, and, on motion, Mr. F. G. CARY was called to the chair.

An interesting communication from Colonel WILDER, of Massachusetts, on the culture of the Dwarf Pear, was read; also, a letter from Hon. G. E. PUGH, on the transmission of seeds from the Government, and a communication from Mr. S. W. POMEROY, announcing that the seed of the Portuguese Onion could be supplied to those desiring it, by applying to this office, 54 East Third street, and stating that it is much superior to our own varieties, being free from the strong flavor and offensive odor that render ours so objectionable,

while the former is more succulent. Mr. P. also states that in England and our Northern States it degenerates in character, but suggests that in this region it may prove a valuable addition to our esculents. The seed was forwarded from C. W. DABNEY, Esq., American Consul General for the Azores. Mr. FOOTE also stated his experience as confirmatory of Mr. POMEROY'S statement of the tendency of the Portuguese Onion to degeneracy in northern climates.

The Corresponding Secretary likewise presented a package of seeds from the Patent Office, which was placed in the hands of the Council for distribution.

Mr. HATCH presented a resolution touching the printing of the papers read and communications received on interesting and scientific subjects, in an annual pamphlet, which, on motion of Mr. FOOTE, was laid on the table for two weeks, and then to be made the special order of the day.

The special order being announced as a treatise on "The Seed," by Mr. WARD, he said that he would, for the present, prefer to offer some further views on the matters presented at the last meeting by Mr. CARY. This being assented to, Mr. WARD proceeded to say that the views he had previously presented were not submitted as original, but as the doctrine accepted by all phytologists, especially the French and Germans. The lower animals, such as the polypus have close analogy to vegetable life. The polyp, with its five tentacles, is a perfect structure of its kind, from the original another would shoot forth, having also its fine tentacles, and this, if separated from the parent, would continue to grow as a perfect, independent structure. So, he claimed, the bud must have an individual vitality, independent of the mother plant. To the mother plant it has a structural relation, but not a functional relation; and as the polyp, when separated from the parent trunk asserts its individual vitality and grows on, so the bud, separated from the parent stem, would put forth its own functional vitality and grow on. He thought that we would encounter great physiological difficulties to assume, as Mr. CARY'S doctrine did, that the bud is but the fragment of another plant, and not itself a phyton. He considered that Professor CARY laid too much stress upon the idea of the *descending axis;* that he accepted the idea too literally in magnifying the importance of the tap roto·

Mr. WARD proceeded to remark that he regarded every point of growth proceeding in opposition to the leaf as the descending axis, and alluded to our indigenous beech as a forest-tree growth with no tap-root—the roots, instead of descending from the axes of growth, are all collateral. The principles of all plants must be consistent, the harmony of nature required it. The principle of the "tap-root" is, he said, in many instances correct; but is not universal, and important as the tap-root seemed, yet cutting off all the laterals, with the tap-root remaining, would surely kill the tree. He instanced the manner of the reproduction of the clover, and the running rose of the swamp, by new attachments and new sections, whose new descending axes thus sent off are as much descending axes as are the "tap roots" that first nourish the mother plant—there is no functional difference. From this he argued that each node is of itself a true plant; they are not fragments of individuals, but each itself an individual. To an inquiry from Mr. CARY, he said, functionally, there is no difference between the descending axis of a sprouting bean and the sprouting node of clover, each will live and produce an independent plant after its kind.

Mr. WARD, resuming, said that he deemed the doctrine erroneous that taught us to resort to seedlings as the best means of preserving our more perfect varieties of fruit. Nature's forms, he said, are not always the best forms. Our aim as horticulturists is to remodel these forms for improvement. If we were to look to seedlings alone, how long would it be till the double tea rose would be running back to a briar, and the petunia to its simple wild vine? No, nature inviting says: "Take me in my best modes; improve on this by care and cultivation, and from this on again to another stage of improvement." And thus, said he, we have found the peach, the pippin and the double tea-rose.

As to the sap circulation, Mr. WARD said that he thought that the leaves had not so much to do in the elaboration of the sap as had been supposed, and cited the instances of the towering palm, with but a tuft of foliage, and the cacti, which, though leafless, grow vigorously. He said that he felt able to affirm that the circulation must be as perfect in every bud as for the whole plant; if not, the bud must die; for without this perfection of its own circulation, it could not form wood, bark, leaves, etc. The circulation must be as complete for the little plant as for the oak. Each bud and branch is, therefore, a separate plant even while on the parental stem, and

as such, has its own separate layers of wood, its own independent pith, its own circulation, receiving the same from the parent, but returning nothing thereunto. How else are we to account for the different chemical products of bark, wood, fruit, etc., if the sap is to be carried through all the tissues to the leaves to be elaborated, specialized? In the the ginger plant, said he, we do not find ginger in the leaf; nor, as to the pepper plant, do we find pepper in the root; it is specialized elsewhere than in the leaf.

Mr. WARD's able disquisition was listened to with great interest, and as he had incidentally remarked that he had in course of preparation a "paper on vegetable circulation," for the Smithsonian Institution, Mr. ERNST moved, that Mr. WARD be invited to read the same before this Society before he should part with its control. The vote was unanimous for the invitation, which Mr. WARD at once kindly accepted.

FRUIT REPORT.—Exhibited—Easter Beurre Pear, from A. H. ERNST—a very fine, rich, sweet, juicy fruit, well kept till this time, and would keep longer. J. K. GREENE—Lady Apple, a very showy, beautiful, sweet and good diminutive fruit. Mr. HATCH—White Pippin, Rawle's Janet, Golden Russet and Cumberland Spice of Coxe, all well known except the last, which is light yellow, medium, rather conical, pleasant, juicy, but not of high flavor; has a slightly spicy taste, as its name indicates. From HUGH KEOWN—Esopus Spitzenberg and Newton Pippins.

SATURDAY, Feb. 28th.

PRESIDENT in the chair:

The Corresponding Secretary presented the Agricultural Report of the United States Patent Office for 1855; also, several packages of seeds, for distribution from Hon. GEO. E. PUGH; and a number of copies of the Transactions of the United States Pomological Society recently held at Rochester, and a circular from J. PIERCE, Esq., of Washington City, on his new raspberry, "Catawissa," an everbearing variety.

Mr. GREEN tendered his resignation as a member of the Council, on account of the demands on his time as a member of the State board of Agriculture. The Society declined acceptance of the resignation, and on motion of Mr. WHITE, the whole subject was indefinitely postponed.

The thanks of the Society were tendered Mr. RESOR for favors extended in behalf of the Society in procuring valuable seeds.

The report of the General Committee on the Premium List being the special order of the day, it was taken up, and its adoption moved by Mr. GREEN.

Mr. HEAVER moved to amend, by saying that the additional premiums recommended by the committee be adopted with the same proportional addition to the premiums on flowers as recommended on fruits and vegetables.

Mr. MEARS moved that the aggregate of premiums for fruits and flowers be made equal.

The amendments, after much discussion, were lost.

On motion of Dr. MOSHER, the report of the committee was amended so as to make the premiums for flowers the same as they were last year, and fruits and vegetables, as at present reported by the committee, and the report as thus amended was adopted.

Fruits exhibited by Mr. BUCHANAN: Pears—The German Musk and Messieur John in fine preservation.

SATURDAY, March 14.

VICE PRESIDENT STOMS in the chair.

The resolutions of Mr. HATCH, in relation to publishing an annual of the Society's transactions, were taken from the table and adopted by a unanimous vote. They are as follows:

WHEREAS, It is important that the more interesting and sicentific transactions of this Society should be published annually, for the use of members and for interchange with other kindred Associations, therefore

Rezolved, That the President and Secretaries, as a Committee of Revision and Publication, be, and they are hereby authorized and required to arrange and prepare for publiction in pamphlet form, a the close of each year, all the important transactions of this Society, including all such interesting and scientific papers as may be communicated to it, and report the same to the Society for its further action thereon.

Resolved, That the sum of $100 be and the same is hereby appropriated to pay the expenses of such publication.

The Corresponding Secretary laid upon the President's table a number of copies of the United States Pomological Society's Transactions, for the use of members—a valuable publication and neatly executed. Also a hundred copies of a pamphlet on the Chinese Sugar Cane, by R. PETERS, Esq., of Atlanta, Georgia, sent by Mr. ORAN, of that place. Also, a communication from C. ROBB, President, and C. N. BROWNING, Secretary of the "Agricultural and Horticultural Order of Cincinnatus," of New Richmond, O., together with the beautiful badge of the order.

On motion of Mr. FOOTE, the thanks of the Society were ordered to be tendered to the "order" by our Corresponding Secretary, for their friendly greeting.

Mr. BUCHANAN laid upon the President's table cuttings of some choice pears from ELLIOT's gardens, Cleveland; one a new pear called Lycurgus.

The special order of the day—Mr. WARD's essay on vegetable circulation—was announced by the Chair, and Mr. J. WARD proceeded to the discussion of his theme. He said it was a good rule, but not always observed, that when men essayed to teach, they should only say what they *know*. Every elementary writer on scientific subjects actually undertakes to tell more than he himself knows; i e. he does not *know* all he says to be true. Hence, the writer this year contradicts the writer of last year, simply because the first did not *know* the truth of that whereof he affirmed.

(TO BE CONTINUED.)

POLYTECHNIC HALL, FARMERS' COLLEGE.

(SEE ENGRAVING.)

SCIENCE is evidently progressing with rapid strides. Apparatus has been greatly perfected and simplified, and discovery follows discovery, both in abstract science, and in its application to the arts.

A few hundred years since, its votaries dared not exhibit even their meager knowledge openly, lest they should have been accused of witchcraft. The Alchemist labored secretly in dungeon and garret, but now wide airy halls invite all who wish, to enter and follow with comfort and even pleasure, the paths of knowledge.

It has been the design of the founders of our institution, to furnish the very best means and appliances for the pursuit of all kinds of sciences, and in carrying out their plans they have erected, in addition to the ordinary College building, (the chief of which was represented in our last number) one especially devoted to the natural sciences, and named Polytechnic Hall. Its neat and graceful exterior honors the taste of the architect who designed it, as the read-

er may see by an inspection of the accompanying cut, and, to show the convenient arrangements of the interior, we give a brief description.

The main building is 60 by 30 feet in the clear, two stories in hight. The lower story is divided into two large rooms; the front room 32 by 30 feet, is the general class room, and will accommodate over one hundred persons. It contains cases of philosophical apparatus, minerals, etc; it communicates with the Laboratory above by a dumb waiter, for the transfer of apparatus during chemical lectures. In the rear of the room is the workshop fitted with a sink in the corner next the class room, and supplied with water, from the main tank, in the Laboratory above. It is also furnished with a cast iron portable forge, QUEEN'S patent, which will also answer for an assay furnace, with a lathe for brass work, a brass founder's furnace, a work bench and tools for metallic work, and a work bench and tools for wood work. These two rooms are each twelve feet high and well lighted.

The story above is devoted to the working laboratory; it is 60 by 30 ft. and 18 feet high, and lighted by twelve long windows; thus forming one of the lightest, and best ventilated laboratories ever constructed. A leaden tank filled from the roof, supplies water to the operators, as they stand at the side tables, furnished with wash-bowls. A door at the side of the large room opens into the furnace room 26 by 12 feet, also supplied with water from the tank. A door on the opposite side opens into the balance room, of the same size as the furnace room, in which the fine balances, and choice metallic apparatus are to be kept.

One of the rooms in the wings is devoted to microscopic research, one of SMITH & BECK'S best instruments having been ordered for the Institution. The other rooms in the wings are designed for the different Professors.

A tract of twenty acres around the building is devoted to the Botanic Garden; its varied surface beautifully arranged by a skillful artist, into wooded knowl, winding walk, and picturesque vale, grotto and lakelet. It is designed to have every kind of tree or shrub that will grow in the open air represented here. This, with the farm adjacent, affords every facility for the scientific student, and if he does not make rapid progress with all these conveniences, it will be from a want of application.

METEOROLOGICAL TABLE.

Observations made at Farmers' College, College Hill, Hamilton County, Ohio, Latitude 39° 19′, *W. Lon.* 7° 24′ 45″ *for the month of February,* 1857, *by Prof. R. S. Bosworth. Hight of Station above the Sea,* 800 *feet.*

	Barometer, corrected for temperature & capillarity.				Open air thermometer.				Clouds—course & velocity.						Wind—direction & force.			Rain & melted snow.		
	7 A. M	2 P. M	9 P. M	Mean.	7 A. M	2 P. M	9 P. M	Mean.	7 A. M.		2 P. M.		9 P. M.		7. A. M.	2 P. M.	9 P. M.	Hour Began.	Hour Ended.	Am't Inch.
1	29.076	29.072	29.133	29.094	9.0	30.0	14.5	17.8	0	0	10	Haze.	0	0	0	WSW. 1	0			
2	29.273	29.254	29.291	29.273	6.0	26.0	22.0	18.0	2	N.W.2	4	W. 4	4	Haze.	0	0	0			
3	29.261	29.085	29.016	29.121	21.5	48.0	46.0	38.5	0	0	4	Strat.	0	0	E. 1	S. E. 2	S. 2			
4	29.043	29.208	29.185	29.079	53.0	53.0	52.5	52.8	10	SW.10	10	S.W. 4	10	S.W. 5	S. W. 4	S. 3	S. 4	1½ P.M.	6 P. M.	0.520
5	29.143	29.067	29.100	29.103	54.0	65.0	51.0	56.7	2		8	0			WSW. 5	S. W. 6	S. 1			
6	29.120	29.025	28.965	29.333	51.3	65.0	61.0	59.1	4	0	5	S. 8	8	S.W. 5	0	S. 6	S. 5			
7	28.935	28.728	28.740	28.801	57.5	66.5	53.0	59.0	10	S.W. 5	10	S.W. 9	10	W. 4	S. 5	S. 6	S. W. 2			
8	29.176	29.376	29.566	29.373	21.0	25.5	16.5	21.0	10	N.W.4	4	N.W.6	0	0	N. W. 3	N. W. 2	N. W. 1	7½ P.M.	In Night.	0.540
9	29.673	29.622	29.534	29.609	7.5	27.0	20.0	18.2	0	0	0	0	0	0	0	S. 1	S. ½			
10	29.724	29.803	29.828	29.785	12.0	14.0	7.5	11.2	2	N.W.8	0	0	0	0	N. W. 5	N. W. 4	N. 1			
11	29.765	29.661	29.587	29.671	3.0	24.0	20.5	15.8	0	0	0	0	2	0	0	0	0			
12	29.472	29.324	29.267	29.355	24.5	46.0	41.0	37.2	10	0		Haze.	9		S. 1	S. 2	S. 4			
13	29.350	29.383	29.369	29.367	43.0	51.0	42.0	45.3	10	S.W. 5	10	S.W. 2	10		S. 3	0	0			
14	29.305	29.143	29.135	29.194	42.5	58.0	55.0	51.8	10	0	2	S.W. 5	0	0	0	S. 1	S. W. 4			
15	29.120	29.050	29.000	29.060	53.5	66.0	57.0	58.7	2	Cirri.	10	S. 4	3	Haze.	S. 4	S. 5	S. 2			
16	29.045	29.035	29.038	29.039	53.5	67.0	55.0	58.5	10	S.W. 5	4	S.W. 5	0	0	S. 2	S. 1	0			
17	29.050	29.015	29.059	29.041	51.5	68.3	63.0	60.9	4	S.W. 8	10	S.W. 6	6	S. W.	S. 1	S. 1	S. 1			
18	29.103	29.007	29.296	29.135	58.0	72.0	63.0	64.3	5	0	9	S.W. 5	10	S.W. 5	0	S. 2		4½ P.M.	5 P. M.	0.050
19	29.030	29.015	29.045	29.030	49.0	52.0	42.0	47.7	10	W. 4	10	Nim.	10		0	N. W. 1	N. W. 2	5 A. M.	10 A. M.	0.360
20	28.906	28.700	28.945	28.850	42.0	61.0	48.0	50.3	10	Fog.	5	SW.10	10	W. 10	E. 1	S. 1	W. 6	10 A.M.	6 P. M.	0.510
21	29.156	29.217	29.289	29.221	35.0	38.5	35.0	36.2	10	N.W.6	10	WNW 4	10	W. 5	N. W. 1	0	0			
22	29.295	29.258	29.247	29.267	33.0	38.0	30.5	33.8	10	N.W.4	10	W. 5		0	W. 1	W. 2	W. 1			

23	29.162	29.118	29.085	29.122	34.0	56.5	49.0	46.5	0	0	2	Cirri.	2		S. W. 1	S. W. 3	0			
24	28.943	28.795	28.850	28.863	44.0	66.0	57.3	55.8	2	0	10	S.W. 8	4	S. W.3	S. 1	S. W. 6	SSW. 1	Passing	Shw's PM	0.050
25	29.043	29.120	29.297	29.153	44.0	54.0	43.0	47.0	10	wsw.5	5	N.W.4	8	N. 5	WSW. 1	N. W 2	N. 3	7½ A.M.	8 A. M.	0.010
26	29.495	29.459	29.359	29.438	29.7	45.0	38.0	37.6	0	0	0	0	0	0	N. E. 1	N. E. 1	N. E. 1			
27	29.200	29.018	28.995	29.071	35.0	57.0	53.0	48.3	2	0	2	0	10	N.W.8	N. E. 1	0	N. W. 5			
28	29.074	29.980	28.970	29.008	30.5	44.0	34.5	36.3	0	0	0	0	0	0	0	W. 2	N. W. 2	11 P. M.	In Night.	0.105
Sums.				817.456				1184.3												2.145
Means.				29.195				42.3												

REMARKS ON WEATHER.

4. Blue birds singing this morn.
5. Ohio broke up and navigation resumed.
8. Rain ended in snow.
10. About 5 A. M. wind blew with violence from N. W.
16. Green grass starting.
17. Ther. at 70° at 3 P. M.
18. Soft maple in bloom—Frogs sing.
19. Driving mist all day.
20. Thunder shower at 4, P. M.—Several showers during the day.
21. A brilliant flash of light in the night, probably a meteor.
26. Honeysuckle leaves an inch long.

REMARKS.—Feb. '56 was much cooler than the same month this year. Its monthly average was but 24.3, whereas this year it is nearly twice that. The barom. was higher the night of the 10th inst. than ever before recorded at this Station.

EXPLANATION.—The state of the sky is indicated in this table by numbers from 0 to 10; 0 signifies perfectly clear sky, 10 that it is entirely covered with clouds, and intermediate numbers show the number of tenths clouded. The direction from which the wind blows is shown in the initials of the points of the compass. Its force is indicated by numbers; 0 meaning a perfect calm, and 10 the most violent hurricane.

MONTHLY EXTREMES.

	MAXIMA.				MINIMA.			
	7 A. M.	2 P. M.	9 P. M.	Month.	7 A. M.	2 P. M.	9 P. M.	Month.
	11th.	10th.	10th.		20th.	20th.	7th.	
Barometer, . . .	29.765	29.803	29.828	29.828	28.906	28.700	28.740	28.700
	18th.	18th.	17th. 18th.		11th.	10th.	10th.	
Thermometer . .	58.0	72.0	63.0	74.0	3.0	14.0	7.40	3.0

TO CORRESPONDENTS.

To answer the many queries propounded to us in relation to subsoiling, draining, Stock feeding, etc.—all important subjects, will require time. And we would here simply say these subjects shall have a due share of our attention. It is an easy matter in a random superficial way to prate on these and other subjects, and to tell A.'s experience, and B.'s experience, but to bestow upon them such examination as the best light of science furnishes, such as is calculated rightly to direct, and not bewilder our readers, can not be done hastily.

Mr. T.'s, views in relation to Bees, and especially the office of the Queen, are novel, but not sustained by scientific observers. We shall in our future numbers have something to say upon bees, and bee feeding, and bee breeding, having been deeply interested in this little insect, and had considerable experience in its management.

We would say to the readers of the CINCINNATUS, we are determined to avoid giving publicity to crude and ill-founded theory, or incorrect practice, or silly gossip, and confine ourselves to scientific investigations, important facts, and well-established practice. And to scout nothing, merely because it wears the garb of novelty, if founded on rational principle. ED.

BENDERSVILLE, Adams Co. Pa., March 19th., 1857.

PRESIDENT F. G. CARY:—

MY DEAR SIR:—Yesterday, at the close of the Terra-culture disclosure, at this place, your article in your Feb. No. of the CINCINNATUS, on "Terra-culture a Humbug," was read with thrilling effect, palpably repeatedly producing that effect on the silent audience.

The Class appointed a committee of seven to draft a Constitution to be adopted by the Terra-cultural Society, April 4, at 2, P. M.—62 of them. Every one of them appeared to be highly pleased with the disclosure. They appeared resolved to have three or more disclosures in this countr for the benefit of their friends.

Cordially Yours,

RUSSELL COMSTOCK.


Ehrgott & Menzel's Lith. Cin.

OHIO FEMALE COLLEGE, COLLEGE HILL, O.

Six Miles from Cincinnati.

THE CINCINNATUS.

VOL. II. MAY 1, 1857. NO. 5.

THE LEAF—ITS FUNCTIONS, Etc.

THERE remains, in order to complete the series of brief articles on Vegetable physiology proposed by us at this time, the subject of the leaf and its functions. And lest we may in these scientific discussions be called tedious, by the practical farmer, we will endeavor for a time to give place to matter which may be regarded by him as more immediately suited to his daily manipulations and duties. This will not however be to the exclusion of what may be styled scientific. For with true progress there must be science. There must be deep and profound research, often leaving in the dark the superficial and unthinking multitude.

The leaf may be described as a lateral expansion of the bark and intimately connected with the inner axis of the stem.

The outer surface is called the *epidermis* or *cuticle;* the internal part, the *parenchyma.* Leaves at first are mere projections of cellular tissue compactly united together, and finally assume a permanent form and position along the axis. Whenever a leaf bud is formed, a leaf is, also ; this, if not entirely developed, is at least rudimentary. The manner in which leaves are coiled up differs in different kinds of plants. Sometimes they are folded up lengthways, sometimes from above, downwards, at other times they are plaited like a fern, or rolled up in a spiral form. They generally lie in a horizontal direction with the plane of their surface.

Two essential modifications of the leaf have been observed, according as it is to live in air or in water. Aerial leaves have a *skeletal* vasculal tissue, in the form of veins, ribs, or nerves; the space between being filled up by a cellular tissue—the *parenchyma,* invested by the cuticle or epidermis. This cuticle generally differs on the two

sides of the leaf. On the under face we find the stomata or pores in largest quantity, sometimes exclusively. This surface is generally rougher and more downy than the upper. It is the reverse with leaves floating on the water. The stomatia are on the superior surface.—There are in these no fibro vascular system but merely an aggregation of cells resembling veins, indeed there is no true epidermis.

The parenchyma of the leaf exhibits two series of cells different in form and arrangement. An ordinary leaf in its fullest development consists of an expanded portion called the blade, and a narrower portion called the *stalk* or *petiole* which is continuous with the midrib, and sometimes of a portion of the petiole forming a sheath, the latter again may be developed in the form of small leaves called *stipula*.

Leaves are simple or compound. The simple leaf has but one articulation with the stem, and the incisions in the margin do not reach the midrib.

The compound leaf has other articulations, beyond that with the stem, or consists of leaflets separately attached with the petiole.

If the petiole branches out into several parts, and each part contains a set of compound leaves, they are called *decompound*, or doubly compound. The simply compound leaves have two principal modifications, depending on the position of the leaflets that compose them. Thus, sometimes all the leaflets proceed from the very top of the common petiole, as in the horse-chestnut; sometimes again they spring from the sides of the common petiole as in the ash.

The lower surface of leaves has numerous progecting prolongations running in different directions, which are divisions of the petiole named nerves; one of these nerves the midrib, or middle nerve, is nearly constant in its disposition, and forms the continuation of the petiole, having generally a longitudinal direction, and dividing the leaf into two lateral parts which are pretty generally equal. From its base and side proceed other nerves running in different directions and frequently uniting with each other. The nerves assume different names according to their thickness, and the degree in which they project on the lower surface of the leaf. The nerves, properly so called, are prominent and very distinct. When less prominent they are named veins; and the last ramifications of the veins, which intermingle frequently, and form the skeleton of the leaf, are called *veunles, or veinlets*.

The cuticle, which covers the skeleton of the leaf and the parenchyma, is often very thin as has been said, is very porous—especially on the under side. The two layers of the cuticle or epidermis seen upon the superior, and inferior surfaces, armed with stomata or pores are interesting in their mechanical structure, and most important in their offices. Having thus briefly and imperfectly sketched the anatomy of leaves, we pass to consider some of their offices, leaving to the Botanist to describe the many and varied forms of leaves which prevail, which, to name and minutely describe, would fill a volume. 'T is here nature delights herself in spreading to our admiring gaze an infinite and pleasing variety. Who can describe the charms of *Flora*, who adequately image forth her beauty? Whatever earth showers from her virgin lap is mingled in her shape, her color, her drapery. We attempt no description of her beauty in leaf or flower. To appreciate her charms they must fasten our gaze—no description will suffice.

But we are to notice, functionally, the leaf.

The leaves and roots are the principal organs of absorption and nutrition in vegetables. The former absorb from the atmosphere the substances which are subservient to growth. They are also subservient to other purposes of the greatest importance in the economy of plants. They inspire and exhale the fluids which have become useless to vegetation, and it is by their agency that the sap is freed of the watery juices which it contains and acquires all its nutritive qualities. The leaf is the Laboratory of the tree. 'T is the faithful superintending chemist that analyzes the particles which are received from the earth and air, and adjusts them in such proportions, as to give to fruit and flower their fragrance, beauty, and specific quality. Now the chemical compounds which afford to plants their principal constituents are carbon, nitrogen, hydrogen, and oxygen.

Carbon and hydrogen invariably occur in all parts of plants.—They form constituents of all their organs, and are essential to their existence. The substances which constitute the principal mass of every vegetable are compounds of carbon with oxygen and hydrogen, in the proper relative proportions for forming water.

Woody fiber, starch, sugar and gum, are such compounds of carbon, with the elements of water.

Leaves probably perform in the vegetable kingdom the same offices as the lungs in the animal kingdom; through them the respiration of the plant is carried on, and at the same time a constant

assimilating process of the gases of the atmosphere, together with the chemical action above alluded to in the formation of resinous, oliaginous and other matters, necessary for growth maturation and fruiting. And these processes are going on without intermission, from the first formation of the leaf until the seed is perfected, only ceasing, when, from ripening of the fruit, their assistance is no longer required.

In order that plants shall vegetate vigorously, it is necessary that the soil contain a certain quantity of moisture, as likewise carbonic acid. In the absence of the leaves, as in the germination of the seed, the component substances of the seeds are exclusively employed in the formation of the roots. Each new radical fiber acquired by a plant may be regarded as constituting, at the same time, a mouth, a lung, and a stomach.

When the leaves, by which it obtains food from the atmosphere, are formed, it probably ceases to derive its carbonic acid from the soil, and during the heat of the summer it receives its carbon almost exclusively from the atmosphere. The power of absorbing nutriment from the atmosphere is in proportion to the extent of leaf surface, hence every increase in the size and number of leaves is attended with an increase of nutritive power, and a consequent further development of new leaves and branches. And these leaves and branches are accompanied with a corresponding extension and development of roots and spongelets. Rob a tree of its leaves and you deprive the tree of its means of growth; rob a tree of its roots and you do the same thing. Diminish the leaves by lopping the branches, and you do violence to nature; truncate the roots and you do the same. Proper pruning must observe strictly these laws. You prune the top to give greater functional power to certain branches. If you prune the root at all, it is to lessen the power of the tree to develop wood and by lessening the vital forces, you thereby develop fruit buds. Such is often effected by a dry season. This year we find much of the last year's growth has developed fruit buds, which would not have been effected in a wet season. Hence, often, rapidly growing, highly cultivated trees develop no fruit buds. Hence, early fruiting, generally, in dwarfs.

The function, then, of the leaves and other green parts of plants is to absorb nutritive matter from the atmosphere, and with the aid of light and moisture, to assimilate and appropriate their elements. When the leaves are themselves perfected, they are employed for the

formation of woody fibers, and all the solid matters of similar compositions.

The organs of assimilation, of the mature foliage, receive according to LIEBIG and others, more nourishment from the atmosphere than they employ in their own substance; and when the formation of the wood substance has advanced to a certain extent, the expenditure of the nutriment, the supply of which still remains the same, takes a new direction, and blossoms are produced. The functions of the leaves of most plants cease upon the ripening of their fruit, because the products of their action are no longer needed. They now yield to the chemical influence of the oxygen of the air, generally suffer a change in color, and fall off. A peculiar transformation of the matter contained in all plants takes place in the period between the blossoming and ripening of the fruit; new compounds are produced, which furnish constituents to the blossom, fruit and seed.—The precise nature of these transformations, and their *modus operandi*, furnish a wide field of inquiry, as well as of speculation. Modern chemistry has afforded us many proofs of the functions of the leaves of plants. The experiments of PRIESTLY, ELLIS, DECANDOLE, DUHAMEL, MARRIOTTE, and others, have established both the absorption and exhalation of gases through the leaves. From some recent experiments also, it appears, that vegetables, by decomposition of moisture, can supply an atmosphere to themselves; and thus, that plants will grow and thrive when inclosed in glass cases, perfectly impervious to external changes of atmosphere, simply by decomposing the water of the moist soil, with which they are furnished.

This decomposition of the carbonic acid absorbed from the air is effected in the parenchyma of the leaves, as well as in all the other green and herbacious parts of the vegetable.

When vegetables are exposed to the action of the sun, they absorb carbonic acid, retaining the carbon and disengaging the oxygen.—The reverse takes place when they are withdrawn from the influence of light, in which case they extract from the air a portion of its oxygen, which they replace by disengaging an equal quantity of carbonic acid gas. Thus, vegetables become blanched when removed from the influence of the sun, lose their green color, become soft and watery, and contain a larger proportion of sacharine matter.—Hence this parenchyma is evidently the seat of absorption and respiration; for it is the part that changes color in exercising these functions.

HOW, BY GRAFTING, THE TREE PARTAKES OF THE CHARACTER OF THE GRAFT, AND NOT OF THE PARENT STEM.

In the brief view of the functions of the leaf above given, we have stated, that it is one office of the leaf to elaborate the sap and assimilate it to growth of fruit and tree. So the leaf then is the active chemist, it imparts such ingredients as effects the result which we find, furnishing us the sweet apple or the sour, the Bellefleur or Crab—true to its own modus of operations. So uniform is this result that we look with confidence for invariably the fruit we ingraft. Thus the most delicious pear may be grown upon the white Thorn, and the finest flavored peach upon the most acid wild Plum.

GREEN MANURING.

Here, too, we have the philosophy of restoring worn out and barren soils, so long as it will raise the valve (*so to speak*)—so long as it has power to vegetate seed.

The atmosphere is a vast Storehouse of oxygen and carbon, and has quite as much to do in nourishing and maturing plants as the soil. From it they derive unquestionably a large proportion more carbon than the soil yields up. Hence, by returning to the soil the repeated and successive productions grown upon it, we may greatly increase its productive agency. Thus the plowing in of clover, rye, or any other green crop, greatly increases the amount of vegetable matter—carbon, in the soil. We are employing not the coral insect to accumulate, and distribute fertilizers; but more minute and silent agencies no less effective to do this great work. And we need not fear of exhausting the treasury—the atmosphere; for if a draft be made, the Bank is immediately supplied without the aid of steam or telegraph.

It is by a close examination into nature's laws that we are thus to derive most pleasure and profit. The tasteful eye can not fail to be delighted with the liveliness and freshness of summer tints, and the gorgeousness of autumnal coloring, in the foliage of our forest trees. But our pleasure will be infinitely enhanced when we proceed to examine more closely, the disposition of the parts, and the laws which govern. The casual observer, as he looks upon the beautiful foliage, has no impression that its parts are arranged according to

law. But a careful examination will soon reveal that even these vegetable arrangements are no less subject to mathematical laws than those which regulate the movements of the planets in their spheres.—ED.

TO MAKE COMPOST WITH AND WITHOUT THE APPLICATION OF LIME.

BY CHAS. A. SHUMAN.

FIRST MADE WITH LIME AND FRESH STABLE MANURE.

MAKE a layer of ground, no matter how poor in quality, about three inches thick and upon that make another layer of unfermented manure, quite fresh from the stable, likewise about three inches thick and cover it with air-slaked powdered lime all over, only a quarter of an inch thick. Then put again a layer of ground on it and continue as before till you have the heap brought to a hight of 6 to 8 feet covering the top with earth, giving the heap a pyramidal form. The proportion should be, one part of earth, one part of manure and one-twentieth part of lime. In dry weather the heap ought to be watered every two or three days. To make the water penetrate, holes are to be made with a stick. In about two or three weeks when you have to work the whole heap over and over, you will find the stable manure completely decomposed; and in about two or three weeks more, when you have to work it over for the second time, you will find yourself rewarded with a top-dressing manure for grains, vegetables and flowers of the most excellent quality.

The volatile parts, which are developed by fermentation, during the process of decomposition, have been prevented from escaping by the layers of ground, and these form a most valuable fertilizing part of the compost.

SECOND MODE WITH LIME AND FRESH VEGETABLE MATTERS.

Make a layer of weeds and any other fresh vegetable matters about one foot thick, and cover it all over with air-slaked powdered lime. Continue in this way with weeds and lime till the heap has

attained the hight you want to have it, then cover it with ground.— After several hours, the heat will indicate that the decomposition is taking place by means of fermentation. The heap must now be closely watched and in case smoke should burst out, a few shovels full of earth must be thrown forthwith on such places, in order to prevent those valuable volatile parts, alluded to in the foregoing article, from escaping; for, it is in the smoke that they are chiefly found. In about twenty-four hours the process of decomposition will be finished and the vegetable matter converted into ashes, presenting an excellent manure for top-dressing purposes. The fresher the vegetable substances are, and the stronger the lime, the more will the success of the operation be guaranteed.

No gardener ought to be without such a compost heap; in weeding the garden he has the best materials needed to make one at his command, if he will only take the little trouble to throw the weeds aside for the compost, instead of spading them under The manuring effect which they expect from that common practice is by no means the same as if converted into manure by the composting operation above described, and it is particularly worthy of note that there are certain kinds of weeds of a perennial character the root of which, instead of decomposing forthwith if spaded under are rather preserved for a longer time in their natural state, thus making the sowing and planting on such ground frequently rather inconvenient. Garden laborers, particularly those who pretend to know as much and more than any body else, are sometimes obstinate in quitting old habits; we have to train them.

Mr. SCHUMAN'S third mode of preparing compost heaps, has reference to the saving of all the offal and slops, old rags, bones etc., in connection with human excrement, and urine, which latter substances he regards as the most valuable of all manures. He provides suitable boxes or other receptacles and from time to time empties their contents into a compost heap and immediately throws earth over the manure that its volatile ingredients may be absorbed and retained. Successive alternate layers of manure and earth are thus accumulated during the spring and summer; the heap is worked over in the fall, suffered to lie during the winter, and in the spring is ready to furnish a most delicious repast to any hungry plant to which it may be given. He lays great stress on the importance of strict economy in regard to all kinds of offal which are

now too often wasted, when a very little labor would return them to the soil which has such great need of them; and his method has the advantage of returning them in a condition fit for immediate appropriation and assimilation by the plant.—Ed.

THE RAW MATERIAL.

CONTINUED FROM PAGE 117.

Water forms a large part of all living things. It is abundant not only in the soft succulent peach or melon, or other luscious fruit, but more than three-fourths of the strong tough muscle, are water; this can only be thoroughly expelled, by a temperature somewhat above 212°; the boiling point. Chemists have shown great ingenuity in extracting all the water from bodies; and this is the first opperation to which they are subjected when they are to be analyzed. Were a man weighing 150 pounds thus completely desiccated he would probably weigh only 40 pounds.

Succulent vegetables and fruits lose much more than this. One hundred pounds of melons would furnish only six pounds of solid matter.

The hard woody stems of shrubs and trees lose much less in drying, still their loss is great, frequently exceeding fifty per cent.

These facts and figures show in a startling manner the necessity of an abundant supply of water for all organisms. To supply this demand, from thirty to sixty inches of rain usually fall in this region, which, penetrating the loosened earth, is seized in the ever open mouth of the rootlets, and thence, ascending the stem, it reaches the leaves and escapes into the air.

In its upward progress it carries with it many earthy salts, which are deposited in the stem. A portion of the water itself is decomposed and converted into the various secretions peculiar to the plant.

Water that is chemically combined can be often freed or changed by the application of heat; thus bread, a day or two after it is baked, loses its rich taste and becomes apparently drier; but put that same bread into a close vessel and heat it and it becomes as

good as new, without the addition or loss of any material; simply a change in the arrangement of the atoms.

Water never exists quite pure in nature; even the rain absolves the various impurities such as ammonia, carbonic acid, sulphuretted hydrogen, etc. although in country places but a very small quantity of these impurities exist, and rain water caught in clean vessels in such places is very nearly pure. If we wish it perfectly pure, we must distill it with care and bottle it tight. After the water has fallen upon the earth, it dissolves many native salts so completely that they will not subside when it is at rest. The amount of these will of course depend upon the nature of the soil. Water flowing over granite and primitive rocks take up but very little foreign matter. Among the purest natural waters hitherto examined is that of the Loka in the north of Sweden, which flows over hard impenetrable granite and other rocks upon which water produces little impression. It contains only one twenty-fifth of a grain (0.0566) of solid mineral matter in the imperial gallon, while sea water contains 2250. grains in a gallon, or more than 60,000 times as much as it. The Croton water that supplies New York contains 10.93 grains, the Schuylkill, 5½ grains, that furnished to London, about 30 grains to the gallon.

Other drinking waters contain even more than these; some which are in constant use contain twice as much: even the waters of the holy Jordan contain 73 grains to the gallon, but generally, in the waters of average purity, which are employed for domestic purposes, there are not present more than from 20 to 30 grains of solid matter in the gallon. Next in purity to rain water comes river water, then the water of lakes, after these common spring waters, and then the water of mineral springs: The waters of the Black sea and sea of Azof, which are only brackish, follow next; then those of the great Ocean; then those of the Meditterranian, and last of all comes those of lakes, which, like the Caspian sea, the Dead sea and Lake Aral possess no known outlet. To this category might be added the great Salt Lake of Utah, three barrels of whose water make one of salt.

The ordinary impurities of spring water are not injurious to its palatable qualities but are decidedly beneficial. Pure distilled water has the most insipid taste of any. The salts contained in spring water undoubtedly aid in the formation of the solid parts of the animal frame. The list of substances contained in good drinking water is quite a formidable one; thus, in the waters of the Delaware, we find

Carbonate of Lime (Lime Stone) Carbonate of Magnesia, Carbonate of Potash, Chloride of Sodium (common Salt) Chloride of Potasium, Sulphate of Lime, Phosphate of Lime, Silica, Sesquioxide of Iron, Soda, Oxide of Manganese, Carbonic Acid, and Organic matter containing Ammonia.

"Well water," says Johnson in his admirable work " the Chemistry of Common Life," "sometimes contains, vegetable substances of a peculiar kind, which render it unwholesome even over large tracks of country. In sandy districts, the decaying vegetable matters of the surface soil are observed to sink down, and form an ochery *pan;* or, thin yellow layer in the subsoil, which is impervious to water and through which therefore the rains can not pass. Being arrested by this pan, the rain water, while it rests upon it, dissolves a certain portion of the vegetable matter; and when collected into wells, is often dark colored, marshy in taste and smell, and unwholesome to drink. When boiled, the organic matter coagulates, and when the water cools separates in flocks, leaving the water wholesome, and nearly free from taste or smell. The same purification takes place when the water is filtered through charcoal, or when chips of oak wood are put into it. These properties of being coagulated by boiling, and by the tannin of oak wood show that the organic matter contained in the water is of an albuminous character or resembles the white of eggs. As it coagulates, it not only falls itself, but it carries other impurities along with it and thus purifies the water, in the same way as the white of eggs clarifies sugar and liquors to which it is added. The waters of the Seine, at Paris, are clarified by introducing a morsel of Alum; and the river and marshy waters of India, by the use of the nuts of the strychnos potatorum of which travelers often carry a supply. One or two of these nuts rubbed to powder on the side of the earthen vessel into which the water is to be poured, soon causes the impurities to subside. In Egypt, the muddy water of the Nile is clarified by rubbing bitter almonds on the sides of the water vessel in the same way.

In all these instances the principle of clarification is the same; the albuminous matter is coagulated by what is added to the water, and in coagulating, it embraces the other impurities of the water and carries them down along with it."

Water is composed of two gases, Oxygen and Hydrogen, in the proportion by weight of one of the latter. Oxygen is that gas found

in the air which supports animal life and combustion, and is indeed the most widely diffused and most active of any element known.

Hydrogen is the lighest substance known, and, from its chemical characteristics, is supposed to be a metal in a state of vapor, as the oxides of the metals are designated in common language by the word *rust* of Hydrogen.

We have, then, taken a hasty view of the agencies of water in the organic world, and did we not fear that the subject, although not intrinsically a *dry* one, would become wearisome to our readers, we might pursue it much farther. We have seen that water is capable of assuming the solid form even at ordinary temperatures, and by chemical combination become harder than granite. We have seen its great destructive power when aided by frost, and its leveling and degrading tendencies, which, if permitted to work unchecked, would soon spread the dry land over old ocean's bed We have also seen that it is the vehicle which transports the atoms of other substances in all their changes and migrations and which assists the vital power in erecting those wonderful structures of the animal and vegetable world.

In our next, we will consider some other of the *raw materials* consumed in nature's laboratory.

'THE OHIO FEMALE COLLEGE."

(SEE LITHOGRAPH.)

THIS Institution is located at the village of "College Hill," six miles north of Cincinnati. The buildings of the College are eight in number and centrally located upon a beautifully diversified and highly cultivated lot of ground, containing twenty-two acres. A front view of these buildings is represented in the Lithograph. The one on the left is the "*Odeon*" containing twelve rooms, each of which is supplied with musical instruments for the use of the Pupils.

The building on the right contains a spacious chapel, lecture-rooms, philosophical and chemical apparatus, etc. The center or main building is doubtless the first structure in its adaptations to be found in the United States. It is one hundred and forty-seven feet in length by eighty one in depth, three stories high besides the

basement, has ninty-seven apartments, seventy-seven closets, eleven spacious halls, eight bath-rooms, (with warm and cold water,) and each story is furnished with iron verandas or promenades. Every apartment is supplied with pure filtered rain water and the whole premises is illuminated with rosin gas. The kitchen and dining-room arrangements are complete. The drawing-rooms are spacious and so arranged that pupils, teachers, and visitors, may all be accommodated together. The improvement most worthy of special remark, and that which must make the establishment the admiration of visitors, is the mode of warming and ventilating.

It is well known to all familiar with the subject, that atmospheric air is the chief agent in purifying the blood; that when inhaled, fully charged with oxygen, it is freighted with the carbon of the blood and thrown off by each expiration in the form of carbonic acid gas. When thus loaded with impurities, it is no longer fit for use, until it has passed through the great laboratory of nature. This carbonic acid gas is absolutely poisonous and often proves fatal in mines and wells. When it is remembered that during every twenty-four hours no less than *three thousand two hundred* and *forty gallons of air* are required for the lungs of a single person; that pure air is the first requisite for healthy bodies and sound minds; that in stove rooms, especially, much of the oxygen is used in supporting combustion, the importance of this subject will be understood. This model building is a vast breathing apparatus, performing a complete respiration twice every hour. It is impossible for the occupants to breathe the same atmosphere the second time. To effect this important object, a tower has been erected 200 feet from the building, into which a current of air is constantly pouring, and is conveyed by a subterraneous passage to the basement, where it is attempered by coming in contact with steam pipes, and passes thence by flues into each room, entering near the ceiling. After pervading the room, and making every part of the same temperature, it is passed out by other flues, the registers being near the floor. In the summer season, the rooms are cooled in the same manner, by means of another set of registers and flues. Experience proves the perfection of the plan. A fire-proof building, two hundred feet from the College, contains the boilers, where the steam is generated for warmth and motive power.

Other buildings, with all the requisite conveniences, are provided for those pupils who from motives of economy, or otherwise, may prefer to board themselves. The grounds are beautifully laid out

and ornamented with evergreen fruit and forest trees, plants and shrubs, and a large conservatory with a fine collection of choice flowering exotics. An artificial lake is being constructed, fed by several excellent springs of water on the College grounds. The internal conveniences, and outward adornments, are calculated, not only to secure the health and comfort, but to refine and cultivate the taste of the young ladies. No pictures or descriptions can convey a full and accurate idea of the College and its surroundings. They must be seen, to be appreciated.

CORRESPONDENCE OF THE CINCINNATUS.

BY PROF. A. WOOD, OF THE OHIO FEMALE COLLEGE.

SAVANNAH, March 28, 1857.

ON the Savannah River, eighteen miles from the Atlantic, this pleasant city is located. It enjoys a more elevated postition than is usual in this flat region, being some sixty feet above the waters of the river, and the low rice-lands on the opposite shore. Its site is a sandy plain, like all other lands for hundreds of miles north or south, once covered with the pitch-pine forests. The river is always muddy, and about as broad here as the Ohio at Cincinnati, forming a harbor wherein vessels of the largest size are always seen. The streets are regularly arranged, crossing at right angles, forming squares and parallelograms. Nearly every alternate square is reserved for a park. The shade is abundant not only in these parks but in most of the streets, some of the broader having a central row in addition to the borders. These trees consist of the Live-Oak and China-Tree almost exclusively, with here and there a Magnolia.— But I would boldly affirm that the Maple and Elm of the North are trees of far more beauty and grandeur than these famous southerners. As to pavements—there is but one paved street in Savannah, and only one planked. The balance are as heavy as the loose native sand can make them. The business streets are closely built, but these are few, while the private residences are separate, generally, each occupying its own square or quarter square, with abundance of garden and shrubbery. A good proportion of these dwellings are tasteful, some being "palatial." A piazza is a universal appendage. Two

of these public squares are adorned with monuments. That in memory of the brave PULASKI, is exceedingly beautiful. It stands about seventy-five feet in hight, of pure white marble, an entablature mounted by a pyramid, all exquisitely wrought and inscribed to the "Memory of PULASKI, the noble Pole who fell in the Siege of Savannah, fighting for our liberty." While gazing with admiration upon this noble structure, I remembered the saying that "Republics are not always ungrateful." The churches of this city are generally large and costly. The Episcopal, St John's, is grand, having a chime of eight bells. The Independent (Congregational) is also a noble structure, built of granite, of vast dimensions. The Presbyterians are now building a splendid church on the monument square. Baptist, Methodist, etc., have also large churches, so that I judge that there are church accomodations for nearly all the whites, which constitute *nearly* one half the population. For the blacks I saw several places of worship, humbler, and doubtless occupied by worshipers devout, and as acceptable to Him who "knows the proud afar off." There are numerous other public buildings of interest to strangers. The Custom House is a chaste and elegant structure, built wholly of the celebrated Quincy Granite, imported hither from Massachusetts!

The PULASKI Hotel is the most noted here, and is usually crowded. Many invalids from the North are staying at this and other houses here, as the climate is remarkably mild. The charges at the above named Hotel are magnificent, not a whit behind those of St. Nicholas, N. Y., while the accommodations are said by those who have enjoyed them, to be *hard.* I have myself enjoyed the hospitality of a good private house.

Last Monday I sallied forth on foot for a botanic ramble in the suburbs. Taking the route of the Central R. R. and the canal, I soon lost sight of town, and was alone with nature and nature's God. The trees are yet naked (save the evergreens, which are here few) and only a few herbs are yet in bloom upon the ground. Beside the R. R. the yellow Krigia Virginica, and Oxalis stricta bloomed. Aside the canal I plucked a single specimen of Pyrrhopappus Carolinianus. Both these flowers resemble our dandelion (Taraxacum). Entering a swampy woods, the bright yellow "butterwort" (Senicio lobatus) met my view, and a running vine which I took for a Potentilla, with ternate leaves and yellow flowers. This plant proved to be Fragaria Indica, described in De Candolle, but in not one

American botany. Formerly cultivated for ornament, it is now extensively naturalized. For this diagnosis I am indebted to Prof. POND and Dr. FEAY, two excellent young botanists of Savannah whose favors I am most happy to acknowledge. On every side I viewed the blue violets (Viola cucullata and the variety palmata) and the white V. primulacfolia. The Liquidambar, very common in Southern forests, was now developing its unsightly anunts, and the Cypress just shooting its frail leaves. Returning, I gathered in the streets some Sysimbrium canescens, with disected leaves and minute yellow flowers, and the budget of this day was complete.

On Tuesday I walked again in company with Dr. FEAY and Prof. POND, a few hours, after their professional labors in school were past; but Wednesday witnessed an all-day excursion in company with the former gentleman, to whom every locality within twenty miles of the city was familiar. Now, with lunch duly provided, we struck off in the forests to the North-west, along a solitary wood-road. The sun beamed warmly upon us and the woods were vocal with the birds. The path was bordered by a little prostrate plant with radical leaves and sessile golden head of flowers of the Composite order, chrysogonum Virginianum. The sweet little Hedyotis rotundifolia (similar but inferior to our Epigea repens) was common as well as H. patens (much smaller and bluer than our H. cærulea). In the dry path Sagina procumbens, one inch high, appeared, as well as Linaria Canadensis and Plantago pusilla. At length we lost the path, and roamed the wilderness at large. Scarcely any trees were yet in bloom, but my companion readily pointed out to me, by the bark and branching, Bumilia lanuginosa and B. tenax, trees never seen in Ohio. Also Hopeatinctoria. Occasionally a familiar beech appeared, and in flower. But what surprised me particularly was to find here in the depths of these Southern woods a fine tall specimen of Anulanchier Botryapium—the veritable shad-bush of New England! whose abundant white blossoms were the earliest admiration of my youth, and signal for the *shad* to ascend the Connecticut!—This tree had now past flower, and I was indebted to Dr. F. for its recognition. And now we had reached a Cyprus swamp, so charcteristic of Carolina and Georgia. Here were many specimens of that noble tree, some a hundred feet high. The trunk, at base is a pyramid and from the enormous roots beneath the ground, multitudes of conical excresences arise to a hight equal to that of high water. Some were two or three, or four feet high, having no leaf or

branch, but bark like the trunk. They are said to be always hollow.

Crossing this swamp we were greeted by a display of Trillium, (sessile?) with leaves most strickingly mottled with brown and green. Pyrus coronaria was also in bloom with roseate flowers worthy a crown. Here the Halesia tetraptera is a shrub ten feet high bloom, with short, bell-shaped white flowers. Yesterday the H. diptera was shown me by Prof. POND, whose beautiful pendulous flowers, polypetalous, and twice as large as H. tetraptera, are most strikingly distinct from that species, notwithstanding the statement of TORREY and GRAY to the contrary. The fruit yet hanging on each tree, two-winged, in H. diptera, and four-winged in H. tetraptera, confirmed my belief of their distinctness. Everywhere we saw Vaccinium corymbosum in flower with its perplexing variety. But of our lunch at the Jasper Spring, and our two other interesting excursions, more hereafter. Yours, etc. A. W.

SAVANNAH Ga. March 30, 1857.

An account of a more extended and solitary botanical excursion may possess the charm of novelty in the reading as it certainly had with me in its experience. Last Thursday morning as the great town-clock struck 4, I went forth from my comfortable lodgings, and by the light of the street lamps, found my way at length to the Depot of the "Georgia Central," just in season for the early train. Taking ticket to "Station No. 2," I entered the car, and awaited its motion. I cared not for any sleepy companions nor they for me. Smoothly we glided on in the darkness and in half an hour were at "Station No. 1." and in an other half hour at "Station No. 2." The reader should be informed that stations occur on this and other Southern R. R.'s generally at intervals of ten miles, there being no villages, as at the North, along the route. Here I alighted, twenty miles from Savannah, just as the day began to dawn, in the East, and the train passed thundering on and I was alone! On the right of the track was a water tank and a wood shed, on the left a one-story unpainted house with a log slave-hut by its side. From the windows of the latter a light faintly glimmered, and a black face peered. At the former all was dark and silent. The air was chilly, and I concluded after mature deliberation, to arouse the house. A neat room with a well scoured pine floor, a magnificent pitch-pine fire

diffusing the fragrance of rosin with its cheerful light, (by the way, we of the North have little conception of the luxury of pitch-pine fuel) and in due time a wholesome breakfast. By this time the dew was off, and so was I, port-folio under arm, for the flowers. I here found myself in a pine barren—still the eternal pine barren—where all was apparently level, yet dry and wet, hammock and swamp, in frequent succession. After taking my bearings, I moved for the "Jenks Bridge" over the Ogeechee some two miles distant. But alas for the flowers! Starved, spindling herbs of a scanty soil. However, *novelty* was stamped on everything. Here a patch sprinkled over with the curious sulphur yellow flowers of the Pinguicula lutea; and there in company with it, a plant of similar stature and habit yet totally diverse, a composite, radiate head with *labiate* disk-flonts it can be nothing else than the Chaptalia.

Half a mile in woods of scattered pines among the humbler shrubs brought me to open fields of great extent, once cultivated, now waste, abandoned! a prospect quite too familiar in this country. A green grassy sward covering the bald earth like a carpet, is nowhere seen: but instead, a few scattered tufts of wire-grass (Andropogon), and slender herbs—so slender! scarcely giving a green tinge to the sand fields. But we must know what these slender herbs are. Sagina procumbens an inch or two high, flowers a line in breadth! What a pigmy! Sinaria Canadensis (more common here than in Canada), Phaca villossa, Leptocaulis divaricatus, a nondescript Euphorbiaceous plant, all purple, almost leafless, spindling,—Plantago pusilla, Krigia Virginica, etc. A hundred such plants would scarcely make a mouthful for a poor goat, which with half a dozen companions were the only occupants seen in these wide fields—Passing a deserted mansion which had the usual out houses and cabins around it, where once the planter lived in luxury when these fields were new, I entered, at length, the lake-like swamp bordering the Ogeechee, where the elevated causeway passes to the Bridge. This swamp is a mile in breadth, and all over it stands water from one to five feet deep among innumerable trees, shrubs and vines. In this swamp appeared at this time only one species of shrub in flower, the neat and elegant viburnum obovatum. The most common trees were the Cypress and Liquidambar. But what most interested me was a species of birch with a reddish-white paper bark, much resembling the white birches of my native hills in N. H. This tree has been as yet but ill defined by botanists, or quite unnoticed. But the general aspect

of this swamp with its miry waters and vine-tangled trees, all bearded with the gray moss (Tillandsia) was gloomy, yet sublime. And as I stood upon the great bridge midway of the rushing river, and there alone contemplated the expanse of waters above and below bounded not by solid land, but by a vast vegetation, arising out of the same watery element, uninhabited and uninhabitable, a sense of awful desolation possessed me, which was not alleviated by the sight of two huge *scaly backs* yonder floating lazily with the current towards me.

But I will not detain the reader by a further narration of my travels on that day, how I dined with the loquacious old toll gatherer half a mile beyond the bridge, at length reached the upland further on, turned my steps in season to reach mine host's at the depot, supper, cars, and Savannah by the hour of 12 P. M.

My good friend Dr. F. met me at the depot and acquainted me with his plan for the next excursion. Early on the following day we (that is, Dr F. Prof P. and myself) were on our way, in coach with span and driver, bound for a botanizing tour for two days with accompaniments as genteel as naturalists could desire, all through the courtesy of Judge K. of Savannah, at whose seat in the country we were to be entertained. By a delightful road through groves of oak, groves of pine, salt marshes, tide bridges, plantations, &c., we arrived at "King's Bridge and Ogeechee Causeway," 17 miles south of Savannah, where we dismissed our establishment and took to our feet. Now we were to survey grounds often trodden by the venerated Elliott the father of Southern Botany. The tide is flowing, and the Ogeechee with full banks (here half a mile broad), is running inland. The sight was exhilerating. But now for the plants—what is this green mat, carpeting the door-yard and foot-path? Sembriera didyma, and what this yellow butter cup so large-flowered, spangling the ditch? Ranunculus nitidus of Elliott, and this humble gray-leaved plant? Gnaphaleum purpureum towering 4 inches above that little creeper, Dichondra Carolinensis! Across the long trussel bridge, the two-mile causeway is before us between two ditches broad and deep, and boundless rice fields beyond, on either hand. To say nothing of the rice fields at present, the ditches were adorned by myriads of the golden club, (Orontium aquaticum,) by Utricularia inflata, by Callitriche, and the aforesaid Ranunculus. Beyond the causeway we were greeted by the fair lily of Atamasco and Aleium striatum. Several small trees, all covered with small but elegant corymbs of white flowers, proved to be Vibunum obovatum of Walter. Another

small tree with larger, rose-red corymbs was Pyrus coronarius. The beautiful Cratægus apiifolia next claimed our attention, also a small tree, armed with spines, profusely adorned with larger corymbs, whose white corollas were occasionally flaked with crimson. Berchemia volubilis (supple jack) (not yet in flower) was everywhere binding shrub and tree in its inextricable folds, and endless varieties of greenbrier (smilax), yet flowerless, defied our approach, by their thorny mazes as they did our analysis by their variations. A ramble in a more open woods, beneath the slight shade of Pinus palustris, the long-leaved, 80 or 90 feet in height, gave us leisure to notice the multitude of the vaccinimus, now flowering and about to flower. Here the taller V. corymborum, with ever perplexing varieties, and there Michaux's V. galezans, a smaller shrub. V. myrtifolium and V. myrsinites, with evergreen foliage were also at hand, as well as the beautiful little V. dumosum. These pine barrens are rich in those whortleberries and blueberries.

Another section of the woods displayed again the Pinguicula and Chaptalia, some 4 or five miles beyond the bridge. Thus during two days we travelled these lonely woods and waters, all satisfied with the reward of capturing the first flowers of the spring, and observing the thousand novelties of this southern maritime region. Just as the evening shades fell upon the ebbing tide of the Ogeeche, the cry arose from the negroes who happened to be upon the bridge, "Alligator, Alligator!" Quickly we were upon a post of observation, and there indeed floated the scaly monster, some 12 feet long, now raising his head and now his tail, and now both at once, above the water. A rifle was at hand, and a well directed shot which was distinctly heard to crash against the scaly head an instant after the report, caused the beast to writhe and plunge, and we saw him no more.

Yours, &c.

THE HONEY BEE.

ENTOMOLOGICALLY, as well economically considered this little insect stands at the head of its order, and to the curious must ever prove a subject of surpassing interest.

As the honey bee has been one of our pets from childhood, and its habits and more interesting traits have engaged our attention,

imparting often most exquisite pleasure; we propose to give to our readers, through successive numbers of our Journal, a few brief articles, of a physico-practical character, in relation to it. Believing that the singular instincts, together with those facts which relate to the proper and economical management of this tiny insect will pay perusal.

In a swarm, or community of bees, there are found three sorts of individuals. The queen, the drone,—and what are improperly called *neuters*, more correctly undeveloped females. The queen is the mother bee; she lays all the eggs, and without her presence a hive is literally useless. She exercises, as her name imports, a controlling influence over the entire community. The drone is the male bee, and lives but a brief period, lives, while he lives, in common parlance a gentleman; eats but does not work, and when his single office is performed, the workers sting and worry him to death, and drag him out from the hive. We have often seen two bees unitedly lay hold of a drone, and often carrying him high into the air drop him upon the ground; but they generally seem content to simply exclude him from the pale of their community. This distinction of drones takes place generally the last of July, or first of August.

The workers are no doubt females as before observed, in an imperfect state, and seem to know nothing else than to work without intermission, and without discouragement as long as the hive has a queen, or there exists the capability of forming one. In so much is this their irresistible instinct, that you may tear down their combs, and remove their entire store, and in ten minutes they will be arranged in order, and all intent and courageous in their work, as if nothing had happened. When disturbed they will plunge into the half-filled combs and engorge themselves, that they may have wherewith to restore as much as possible, their plundered domain. When they swarm the same is true, they always fill their honey sacks to their utmost distention in order to have a store upon which to commence their new work.

A good community of bees consists of one queen and about 20,000 workers, and in the midst of the working season, from three to eight hundred drones. The queen, drones, and workers are quite distinguishable to the most superficial observer. But as there is but one queen to so large a number, it is pretty difficult to see her, and we have seen not a few, skeptical as to her very existence. Going upon the unsafe principle of believing only what is furnished by the

evidence of their own senses. The anatomy of these different bees is as different as their offices, without going into much detail in their physiological analysis, it will be interesting to note a few particulars. As before observed the most superficial observer can at once see the difference. The queen is decidedly the most beautiful and attractive object to the beholder, as she appears to be to those of her own community. She is the impersonation of modesty and grace in her every movemont. She is attended with an escort, or retinue, at times entirely encircling her, with uniformly head towards her, receding at her very approach, and seem to delight in paying to her their respects, and are specially favored if permitted to touch her with their antennæ.

When laying her eggs she proceeds from cell to cell with the same order and system in her movements. She first enters the cell as if to ascertain its condition; after emerging she thrusts her abdomen into the cell down to the very apex, at which point in the angle she deposits her egg. And thus she proceeds from cell to cell, and from comb, to comb, until she deposits some eight to twelve thousand eggs.

The drones are easily distinguished, from their thick *alderman* like appearance, with big round heads, large eyes, fat cheeks thick moustache, and rotund bodies, often lying in the hive in clusters as dull and stupid as their gouty prototypes among the human species, yet true to their own nature, and not corrupted. And when they do make a sally from the hive, it is but for a short space from one to three o'clock, and then to make a most tremendous buzz, as if to show their exceeding consequence.

The workers may easily be distinguished by their being of smaller size, have twelve joints to their antennæ, and six abdominal rings. The first joint or square portion of the posterior tarsi, is enlarged at the posterior angle of its base, and shaped like a pointed auricle, having its internal surface covered with a fine, short, close, silky down, and are provided with stings. The mandibles are spoon-shaped, and not dentated. There is on the outside of the hind-legs, a smooth hollow, edged with hairs, called the *basket*. The queen has the same general characteristics, but is of larger size, especially in the abdomen and considerably longer. She has a shorter trunk, and the mandibles groved and velvet like beneath the tip.

The males, or drones, differ from both the preceeding, by having their ten joints to the antennæ smaller and more velvety mandibles,

and shorter fore-feet, and are destitute of stings. The abdominal cavity of the queen, and working bees, contains a little bag of poison communicating with the sting. In the queen moreover there are two large ovaries, consisting of a great number of smaller cavities, each containing eggs. These ovaries open near the anus, previous to which they dilate into pouches, where the egg is delayed to receive a viviscous coating, from an adjacent gland. The inferior half circles, except the first and last, on the abdomen of working bees, have each on their inner surface, two cavities, where the wax is formed in large layers, and comes out from between the abdominal rings. In the midst of the working season this may be seen with the naked eye.—This wax may be regarded as the fat of bees, and when the "*work glows*," (opus fervet) is generated rapidly, in so much that the scales of it fall profusely at the bottom of the hive, making a fine composition for the deposite of moth eggs, which we shall have occasion to notice more at length. Below these abdominal cavities, is a particular membrane, formed of a very small, hexagonally meshed network, which is connected with the membrane, lining the walls of the abdominal cavity. We have said that the office of the workers was to labor. It may be, as some have supposed, each in his own peculiar sphere, having his own particular work. Of this division of labor among the workers, however plausable, we have nothing to affirm. Of the sexuality of the workers, it may be interesting to remark that we have, upon depriving a swarm of a queen, witnessed their operations in rearing one. For a short time the entire community seems to be in an unsettled and dispirited condition, runninig in every direction, as if mourning and distracted at her loss.

But finding in their bereavement that they have ability to rear a new queen, there being worker eggs present in the combs in the proper condition, they select one or more, and set about the work with diligence, of making one or more queen cells, over as many of these eggs; which cells differ entirely from ordinary cells being about the size and shape of a small pea-nut, and opening downwards. This egg soon hatches, and the bees, true to their instinct, feed the young larva upon such food as is calculated to develop her sexual character. After about fourteen days, emerges the young queen, some two days sooner than if she had been brought out a worker.—The food of the young queen upon examination, is more stimulating, being sapid, and quite sharp to the taste, differing materially in character from that fed to the drone, or worker. For the sake of

designating the queens food it has been called by APIARIANS' "royal jelly."

Once upon the queen being removed from our observing hive, in which every operation can be seen; the bees set to work after a short time, to restore her majesty, and by the second day they had commenced twelve queen cells, and in fourteen days, twelve young queens emerged. Here again, true to their remarkable instincts, they immediately set about killing them, and did actually kill all but one. The community will not suffer but one queen to live in a hive at a time. It is from some four to seven days after she emerges before she can fully perform the office of queen. Her fecundation must first take place, which is in the open air, generally above the regin of birds, amidst a sally of drones before mentioned, which at the time pervades the air, flying in all directions.. Why so many drones? So that the young queen which rarely leaves the hive may be sure not to escape meeting one. The instant of copulation the drone drops dead, and the queen darts to the hive, and in from three to five days begins to lay eggs, and continues to lay eggs during the period of her natural existence, of from two to five years.

This to many may be regarded as imagination. But we make these remarks from personal observation, and experience, besides, they are in accordance with the expressed views of our distinguished Apiarians, with HUBER at the head—ED.

(TO BE CONTINUED.)

SPRING.

As regards vegetation, we have seen that winter is the season of repose, of passive existence, of dormancy, though not of death. Spring on the contrary, is the season of returning life, of passing into active exertion, of hope, and of joy; of hope, as the world of life springs into view immediately after the industrious hand has scattered the seed upon the ground, and of joy, in contemplating with confidence, the reproductions of the herbs and flowers. The emotions to which this delightful season gives rise are better felt than described, and to know and appreciate them you must repair to the country and enjoy them for yourself. There the chosen draught,

of which every lover of nature drinks, can be had in its freshness and purity, and that too at natures living fountain ; Attempt to carry it away in the clay pitchers of human description, it loses all its spirit becomes insipid, and acquires from the clay and earthy taste. Would you enjoy the beauties of spring take advantage of the morning, when the beams of the newly risen sun first gilds the hill tops, and when the birds sing their matin songs, when earth and air are in all their freshness, and all nature mingles in one common morning hymn of gratitude and praise. Such scenes are calculated to exhilerate both mind and body.

THE NEW SUGAR CANE.

Mr. Hedges, of our city, has shown us samples of sugar made from the "Sorgho," which, in flavor and appearance, is equal to the Brazil sugar. This is the first reliable and satisfactory evidence of the success of the Chinese cane as a sugar crop. This was made by Mr. Leonard Wray, Esq., of England, who has devoted many years to the sugar business in various parts of the Indies, as well as France, Algeria and South Africa; and to his efforts are we indebted for the process for granulating the new species of cane syrup. Mr. Wray has just arrived in this country, at the solicitation of some influential men of the South, who were aware of his great skill and success in the sugar manufacturing. He brings with him the seed of several species of the "Imphees," found by him in Caffraria, which he says are more precocious and better suited to our northern latitudes than the Chinese variety, although he speaks in high terms of the latter.

Mr. Hedges has also a sample of alcohol, made from the fermented juice of the cane, of a most superior quality. He has, also, some of the simple juice, considerably resembling the white wines of the Rhine. Such of our citizens as have interest in these matters, will do well to call on Mr. Hedges, at the office of Hedges & Free, corner of Main and Water Streets.

The facts furnished by Mr. Hedges, a notice of which we clip from the Commercial, were not in the possession of the Committee of the Cincinnati Horticultural Society, at the time of making their recent report adverse to the "Sorgho," as a sugar plant. This

report will be found in the Society's Transactions, of the present number.

Chemistry which is converting our coal beds into what is equivalent to sperm candles, and whale oil, it may be inferred, has no impediment to its progress here. The main question is, "is there sugar in it?" joined with that other, equally important to success, "is there money in it?" These questions, answered in the affirmative, the thing is done.—Ed.

MAPLE SUGAR CROP.

The aggregate product of Maple Sugar in the United States in 1850, as returned by the census of that year, was 34,253,436 pounds, whereof the several States producing any considerable amount made severally as follows:

New-York	10,357.484, lbs.	Vermont	6,349 357 lbs.
Ohio	4,583.209 lbs.	Indiana	2 921.192 lbs.
Michigan	2.439 794 lbs.	Pennsylvania	2,326 523 lbs.
New-Hampshire	1,298.863 lbs.	Virginia	1,227.665 lbs.
Massachusetts	795,525 lbs.	Kentucky	437.405 lbs.
Illinois	248, 904 lbs.	Missouri	178.910 lbs.
Maine	93,452 lbs.	Tennessee	158,557 lbs.

Considering the extension of our settlement toward the North and West, the present high prices of Sugar, the general attention this year to Sugar-making, and the long season in which the flow of sap, though fitful, has been continued, we estimate the Maple Sugar made this year at fully double that of 1850, or not less than Seventy Millions of pounds, worth at least ten cents per pound, or an aggregate of Seven Millions of Dollars. In fact, we do not believe a supply of Sugar equal in quantity and value to this could have been imported and distributed to the inland farmers who will mainly consume this home-made staple for less than Ten Millions of Dollars.

How much has it really cost the country to make this Maple Sugar? —that is to say: Suppose we had not made it, how much other wealth would have been created in its stead? Bear in mind that it has mainly been made at a season when our farmers are least actively and least profitably employed, and that all the work of preparation for Sugar making pertains to the very heart of Winter. Our estimate is that, had no Maple Sugar at all been made in the United States this year, the production of other wealth from the labor directed to Sugar making would not have amounted to Three Millions of Dollars.

There is a mine of economic suggestion in these facts, which we prefer that the reader should develop for himself.

THE SOIL—ITS PROPERTIES, ETC.

ANY national system of agriculture must be based on a correct knowledge of the nature and proportion that exist in the soil; and the manner in which those properties which are wanting may be most economically supplied; the object of tillage in general, being, to produce in the most advantageous manner, certain results in the growth and maturation of the various crops grown. We must proceed here in the culture of plants prcisely in the same manner as we do in the fattening of animals. The increase or dimunition of the vital activity of vegetables depends on heat and solar light, which we have not at our disposal. It is our especial province to supply substances adapted for assimilation, by the power already present in the organs of the plant. But what are some of these substances.

The soil which covers the surface of the earth, is composed of the pulverized matter of the different rocks, the primary ingredients of which are silex, alumina, lime, magnesia, iron, and a few other salts. This is called the primary soil, and according as either of the component ingredients preponderates, it may be sandy, clayey, calcareous, ferruginous, saline. The soil also contains a greater or less proportion of vegetable remains, such as the decomposed leaves and trunks of trees, or the remains of cryptogamic and other marsh plants. Some soils, indeed, are almost entirely composed of vegetable remains, and constitute the rich dark mold, which duly dilated, is esteemed so valuable in our fertile alluvial bottoms, and which are so well adapted to the growth of our Indian corn. Some plants, however, thrive best in one kind of soil, and some in another.—Hence it is the business of the skillful agriculturist, to adapt his soil to the peculiar kind of plant he wishes to rear in perfection.

The pure earth it is thought by many, do not afford any nourishment to plants; at all events, they enter but very sparingly into their compositions. They serve, however, as a medium by which water, carbon, and some of the gases, are conveyed into their Juices and also as a convenient means by which the fibrous or bulbous root are attached to, and held firm and stationary in the ground. The true nourishment of plants is water and decomposing organic matter, whether vegetable or animal. The constituent parts of the soil which give tenacity and coherence, are the minutely divided particles,

and they possess this power in the greatest degree if they be aluminous.

If the silicious or sandy particles are in excess, sterility is the consequence. Neither must the soil be too much comminuted; a certain proportion of coarse particles seems to be requisite. No one ingredient should be in excess in any fertile soil, not even of organic matters. So that the best soil for general purposes is that where an equable admixture of the general ingredients is present, with a portion of the particles in a state of minute comminution. Much of the fertility of soils depends upon their power of absorbing moisture from the air. When this power is great, the plant is supplied with moisture in dry seasons, and the effects of evaporation during the sunshine is compensated by the absorption of moisture at night.—Stiff clayey soils which absorb a great proportion of rain water, are not however, the best suited for absorbing it in dry weather, as the surface becomes hard, and separates into deep fissures, which assist the evaporating effects from the interior. The best absorbing soils are those in which there is a due admixture of sand, clay, and lime, with animal or vegetable matter, and of lose and light texture, freely permeable to the air and moisture.

Carbonate of lime, and animal and vegetable matter, are highly useful in this respect to soils; they impart an absorbent power without giving the soil too great tenacity. The absorbent power of soils ought to be adapted to the climates. A sandy light soil will be more productive than a deep clayey one, and the contrary. The subsoil also has great effect in modifying the quantity of moisture. Shallow soils situated on a gravely base, soon lose their moisture and fertility, and are the most difficult to preserve, or once exhausted to recover; while deep clay, subsoils retain moisture for a long time, and are the most lasting and improveable. A soil exposed for centuries to all the influences which effect the disintegration of rocks, but from which the alkalies, thus rendered soluble, have not been removed, are able to afford for many years, the means of nourishment to vegetables requiring a considerable amount of alkalies for their growth; but it must gradually become exhausted, unless those alkalies which have been removed are again replaced; a period therefore will arrive when it will be necessary to expose it from time to time to a further disintegration, in order to obtain a new supply of soluble alkalies.

LIEBIG says, the first colonists of Virginia found a soil rich in

alkalies; from which harvests of wheat and tobacco were obtained for a century from one and the same field without the aid of manure; but now whole districts are abandoned and are converted into unfruitful pasture lands, which, without manure, produce neither wheat nor tobacco. This is fast becoming the condition of many of our supposed inexhaustible fields. They are gradually parting with those elements of fertility which have rendered them so valuable and by a slow and steady atrophy are destined to the same final exhaustion.

How many important problems are here presented to the scientific agriculturist, as to the best method of arresting this process of deterioration, and of maintaining and improving the condition of our soils, and doing this in the most economical way. Problems, for the proper solution of which, our State legislature should come to our aid.

EDUCATION OF FARMERS.

BY O. A. WILLARD.

THAT the farmer needs education, is not now debated by sensible people. They believe it. The education best adapted to his pursuit is, however, a subject of much difference of opinion. "Give him a College education," says one. "Pooh?" exclaims another, "we want Agricultural Schools." "Not at all," say others; and among these theoretical squabbles the *object* is forgotten. JAMES or JOHN is left to dig up the dirt; the theorists wrangle, and imagine they deserve well of their country.

The fact is, there is a great deal *said*, and not much *done* in this matter, as any one will find by "heaving the log:" he will discover that all the breath spent in discussing this point has not wafted us a single knot toward the harbor—Education. Our farmers' sons sweat in the wheat fields and toil in the meadows, but educated they are not, nor are likely to be, until some new spirit seizes them.—You may plant colleges, agricultural colleges if you will, in every hamlet; and their vacant halls will proclaim the fact that though we may esteem an education *good*, we are not willing to take the measures to procure a *good* education.

And in theorizing about the particular class of schools needed, we begin at the wrong end. First, let the farmers rouse themselves to some action in the matter; let a deep, universal sense of the importance and necessity of education be felt, and the particular method will regulate itself.

It would be useless to errect a mint without gold for coinage.—We plan our agricultural colleges. What we want is *bullion*. We want the eager mind first. We want farmers aroused from the inactivity, in this respect, into which they have allowed themselves to fall. We want them to take hold of the matter in earnest; and until they do, until from the rocks of Maine to the bayous of Louisiana, from the prairies of the North-west to the swamps of Florida, there comes up a heartfelt cry, "we must educate"—until then, we say, the root of the matter is untouched.

There are now appliances enough *where the true fire burns.* The farmer contributes nobly to our great men; and if this individual spirit was general, the world would be regenerated. We have honor and truth, virtue and health—the greatest blessing—and numbers, and wealth; but without education, without a main-spring, we must, run down. And here we are, at the foot of the hill. TANTALUS-like, the fruit just above our heads, but we can not reach it. Does any one doubt it? Does any one contend that the farmer occupies the position that he should occupy? Let us look at the facts.

Who fill our offices? Who tax our property? Who tug at the wheel? and who ride? Who pay the taxes? Who spend the money? and, worse by far, who sit in the seats of learning?—Who wield the pen—ay, "the pen agricultural?" Who make the great speeches at our agricultural fairs in most cases? Are we rulers, or ruled? When we take our wheat to market do we find matters arranged for our convenience and benefit, or are we exposed to the tricks and deceits of a horde of sharpers, who lead us as "lambs to the slaughter?" Every one knows the true answers to these questions. We farmers are made in too many cases the sport and tool of others. Must this be so? Must we, through our own culpable negligence, want *knowledge?* Must we *lions* pull our teeth, and go about begging our food from jackalls? Agriculture is indeed the greatest, noblest, and best of all pursuits, *when* its sons become educated men. It is a popular mistake to suppose the farmer's son fit for no pursuit but *agriculture.* We want to recruit the ranks of every pursuit from their number. When a ship-

wright constructs a vessel, he selects, not some cultivated, ornamental, city-grown trees from the timber of which to lay her keel, but the live oak from the forest; and then molds and fashions it and secures strength and reliability. Where do you find the live-oak *mind?* Among farmer's sons; and all it needs is the chisel of intellectual discipline, to pare off the verdancy and rough corners, to fit it manfully to sustain the ship Republic.

But I see before us a brighter day. I see the farmer and the farmer's son occupying the positions which God designed them to fill. I see our offices of trust and honor filled by farmers' sons. I see the profession dignified and enobled by farmers' sons. I see the professors in our colleges, the editors of our papers, the judges upon the bench, from among farmers' sons. I behold in the future the administration of government in the hands of farmers. A second CINCINNATUS at the helm of State, SOLONS as law-givers, WASHINGTONS in virtue, and SOLOMONS in wisdom. All this I see clearly when the farmer girds himself for the strife intellectual.

Farmers! the field is white, and ready for the harvest; shall it remain uncut, or will you to the work?

APPLE BREAD.

Apples are so scarce and high this year, that it will hardly pay to use them for any purpose, except as an occasional luxury. In some parts of the country, however, there is the usual abundance, and they may be used as in France, where a light pleasant bread is made by a mixture of apples and flour, in the proportion of one of the former to two of the latter. The usual quantity of yeast is employed as in making common bread, and is beaten with flour and warm pulp of the apples after they have been boiled, and the dough is then considered as set; it is then put into a proper vessel, and allowed to rise for eight or twelve hours, and then baked in long loaves. Very little water is requisite; none generally, if the apples are very fresh.

LETTER FROM PROF. WOOD.

HILLSBORO, N. C. March, 13th, '57.

THIS place, situated in the broken interior of this great State, is one of the oldest towns, both in appearance and in fact, which I have yet seen. It is famous in histor as once the head-quarters of Lord CORNWALLIS, and the very building used by that old notable as his "Markee" still stands a delapidated shop just over the way yonder.

The rock in this vicinity, is a sort of mongrel granite, coarse and unsightly. The soil is mostly clay, the redest of the red; indeed exactly the color of Spanish-brown; it is strong and when well cultivated, productive. Corn and wheat are the staples in this part of the State. In the woods are many species of trees common in New England, as the black and yellow birch, beech, maples, and hemlock. As I came to this region for the purpose of studying botany, I lost no time after ariving, in repairing to the residence of the Rev. M. A. CURTIS, D. D. a highly respectable clergyman of the Episcopal Church in this town. Dr. CURTIS is widely and most favorably known among the botanists of both Europe and America, and his name occurs frequently in all works treating of the American flora. Actuated by a most ardent love of natural science, he has for the past twenty years of his life, found his pastime in the study of plants, and his collection of American species is perhaps unequaled in extent by any other private herbarium in the land. Of late years he has devoted himself exclusively to the collection and study of Fungi, a field of research exceedingly broad and one wherein the Dr. has in this country, no rival. His herbarium contains some 30,000 specimens of these plants, belonging to some eight or ten thousand species of which nearly five hundred are new, having been first detected, defined and named by himself.

But what are the Fungi? is a question which some of our readers may ask, on reading the vast numbers above stated. Something more than toadstools and puff balls are required to amount to such. Among the Fungi are reckoned the Molds and Blights and Mildews, which arise from any decaying substance, the Dry Rot, the Red snow and the Jelly Plants; in short, every flowerless plant which is neither moss, nor lichen, nor liverwort, nor sea-weed, falls

into this great *Omnium gatherum*—the class of the Fungi. Although the Fungi are immensely various in form, structure and size, all are said to possess this one common characteristic, of being "nourished by *mycelium*." Now this mycelium is the real plant, consisting of innumerable fibers, interlaced and matted together, and concealed beneath the surface of the medium in which it grows. From this ground-work of the Fungi, when mature, the conspicuous part of the plant, the fructifiation arises. This latter growth is often very rapid; for example the mushroom arises in a single night. This quick growth is accounted for by remembering that the mycelium, whence it springs, may have been accumulating materials for its nourishment, for weeks or months previous.

Fries, the great pioneer of this department of botany, still living in Sweden, states that he found 2000 species of Fungi, within the space of a furlong. Our friend Dr. Curtis, bears testimony to similar profusion in this country. But we must not estimate the whole number of species by this rule, since a large proportion of these species may be repeated in every or any other equal space examined.

The study of the Fungi is at present exceedingly laborious, from the want of the proper authorities for the known species, from the fact that about every tenth species we find is yet a new and undescribed one, and from the puzzling fact also that the same species are not constantly developed in the same localites but only occasionally. Yet all these difficulties are surmounted by the perseverance and skill of Dr. Curtis, and he alone is in possession of the materials and the requisite knowledge for giving to the world our American Mycology in a permanent and intelligible form for the diffusion of the knowledge of this deeply interesting but neglected branch of Natural Science.

But the cost of publishing such a work would far exceed any individual means. Would it not be worthy the patronage of the General Government through the Smithsonian Institute, to give such a work to the nation? Or more especially worthy of the great State of North Carolina to foster such a noble enterprise through, or in connection with, the Geological Survey?

CIN'TI HORTICULTURAL SOCIETY—PROCEEDINGS.

(CONTINUED FROM PAGE 188.)

EVEN SCHLEIDEN, held good as authority—a man who had worked with hand and eye, and had called to his aid the habitual use of the microscope, and investigated the laws of vegetable economy most assiduously, so that it would seem that if any one could tell truly all that could be observed, it were he—still SCHLEIDEN is full of errors, and has often been proved so. He said what he did not know. He teaches what others taught, but what no one ever knew, and could not know, because they were not true, hence he is contradicted by later writers, and his errors shown. And SCHLEIDEN like the true philosopher that he is, came boldly forth, and, over his own signature, admitted his errors, and all because he neglected the rule to say no more than he knew. On the same principle we must here be firm in exposing our error whenever detected. For instance, it was said and written that the roots of trees and plants excreted certain substances which are found as original secretions in the texture of the plant, as potassium, etc., all founded on the experiment of putting one root into a solution of a lead, and another of the same plant into pure water, when it was found that some portion of the poisonous lead was carried over and impregnated the pure water. But it was soon found that so far from this being the result of organic excretion, it was simply produced by capillary attraction on the surface of the roots, and when this medium was effectually cut off, the pure water remained free from any infusion of the lead. So with EHRENBURGH, with regard to his Infusoria, in which he fancied that he had found muscular power and organic functions, such as prehension and digestion but which, ere long, were discovered to be not animal, but vegetable developments—vegetative growths in different ages or stages of development. Science demands that in attempting to teach, we must say what we know, and as to what we read and do not know, let it always be presented with a mark of interrogation. And, said Mr. WARD, he is a friend indeed who corrects another when in error.

Mr. WARD then read from Mr. CARY on "The Root," that "a root [illegible] turn green on exposure to the air." Now, asked he, does [illegible] that? Others have proved that when exposed the root does [illegible] not die, but may present all the external

appearances of a *branch*, and as a branch, will bud and grow. I think I can show, along Millcreek, where roots of trees have been bared by the stream, they have sprouted and budded and grown into shrubbery, as branches would. LOUDON, he said, had bent a cherry-tree and buried its top, thus bent, in the ground; there it took root, and he gradually loosened and removed the earth from the original roots and finally the *top*, thus rooted, became the sustaining part of the tree, and thus reversed, it grew and flowered. Again he quoted from Mr. CARY that "*the root never becomes a branch.*" (Mr. CARY asked. "Do you think that what you have adduced proves otherwise?") Yes, continued Mr. WARD, for what is that that was once below the ground as a *root*, and is now budding and bearing foliage, but a *branch?* Moreover, he had himself seen an apple-tree, in the orchard of Mr. HUGGINS, near Granville, Ohio, which had been thus reversed, and was then *bearing apples!* (A voice — "I saw the same.")

It is claimed by some, said Mr. WARD, that the plant in embryo consists of the plumule and the radical—*i. e.*, the ascending and the descending axes. This, he thought, is not exactly the case, at least as a thing known, and is not consistent with the phenomena of the embryo. "Radical" may be a convenient name for all that is not seed-leaves, etc.; but it is, after all, no more descending than ascending. He then proceeded to speak of the "stem," as an intermediate part, which he illustrated by the growth of the bean. First, its seed-lobes open, and an axis is produced, and presently from this come fibrous roots. The first growth is intermediate, becomes green, is the stem, and not a root. This idea of the stem being ascending and descending, I can't exactly comprehend. Look at the iris: the stem lays along horizontally below the surface of the soil, and sends its roots below itself. The stem here is not an ascending axis; the stem is horizontal, and shoots directly into leaf and flower. So with the mint and verbena, where the stem is on the top of the ground horizontally, and sends roots downward along its course. So, what shall we say of the mistletoe, a perfect plant as any others, yet growing under the trunk of a tree; it sends its roots up instead of down, while the leaves and flowers are sent downward toward the earth.

So in regard to the potato, which is not a root. It may be so called for popular description, but with scientific accuracy the potato is a *bud*, and not a root—a growing, subterranean bud. Nor is it a stem, as the tuber of the dahlia is, but a congeries of buds contain-

ing many plants. Nor are the several buds scattered at hazard upon the potato, as many have supposed. They will be found to grow in a regular and uniform spiral line, winding around the potato. With the dahlia tuber it is otherwise—there are no buds but what were attached at the plant, and the root is from the other extremity; here the tuber is really a stem, a swoollen internode between two buds, the root below and the bud above.

The learning and clearness with which Mr. WARD presented his views, commanded the earnest attention of the large number in attendance.

On motion of Mr. ERNST, Mr. CARY's reply to Mr. WARD was made the special order for the next meeting.

SATURDAY, March 21th.

Vice President STOMS in the chair.

The Corresponding Secretary presented two cans of valuable grafts sent by Hon. T. C. DAY, for distribution.

Mr. ISRAEL FOOTE was elected to membership.

Dr. WARDER exhibited a bunch of the Osier Willow from the second crop, the cuttings full eight feet high. Dr. PETTICOLAS exhibited a seedling Apple from the orchard of Mr. E. JOHNSON, which, from its merits, the Fruit Committee deemed worthy of special notice—a great annual bearer, keeps well, and is excellent for cooking. A seedling from the orchard of P. B. SWING, Esq., of Batavia. Also, by Dr. A. WHIPPLE, Rawle's Janet, a specimen showing the prolific character of this fruit—the branch, but about one foot long, having borne eleven apples.

The special order of the day, being Professor CARY's reply to the views presented in the disquisition of Mr. WARD at the last meeting, was announced, and Professor CARY proceeded to the discussion of the questions involved. He said that when Dr. STURM stated, some months since, that a tree would vegetate when planted top downward, the assertion was deemed incredible, and friend LONGWORTH declared that when that was substantiated he could even believe in spirit rappings! I did not then dream that such an announcement would call forth the doctrine that it mattered not which end of the seed was placed in the ground—downward or upward—or that a branch destined to flourish and develop itself in light and air could have its features and functions changed to the condition and character of a root, which, with an invincible instinct seeks the earth

and darkness, could be changed into a living fructuous branch !—Yet such is the dogma proclaimed, and voices are heard attesting the verity of the occurrence—declaring that they have seen the parenchyma become green, the spongioles opening their tiny mouths and eructating buds and leaves, and even clusters of fruit hang along the main *roots*—and holding the converse as true that the leaf-buds would elongate, not into branches, but into roots.

Resuming, he said : Professor WARD had sought illustrations for the change of root into branch and branch into root among the lower order of plants ; but even there he will find that his principle will not apply, for no instance can be given, among them all, of a root becoming plumule, nor of plumules changed into roots. He then proceeded to consider a statement of Professor WARD in relation to the knot, as when the branch grows down into the parent stem as a root. Mr. C. said he was somewhat surprised at a statement so unphilosophical as this, from one so learned as Professor WARD, and claimed that this view could not be sustained either by observation or authority. He maintained that it never "grew down into the trunk ;" that it never extends beyond the wood-zone upon which the bud originated ; and the appearance of insertion is caused entirely by the successive layers of outer-growth, and not by extending the growth of the branch downward into the parent stem. He desired to be distinctly understood and represented as saying that *provisionally* and by *accommodation* a root may become a branch, and in the same way a branch may become a root ; but never is the one converted into the other in structure nor function. *What is developed from them or upon them may have these characteristics ; hence the root may be made to develop buds, and the branch roots ; but incrementitious roots, can never become normal branches, nor the buds become normal roots ; their structure, their manner of growth, their functions, the elements whence their nutrition is derived, all forbid such a perfect transmutation of character as Professor Ward's doctrine must needs inculcate.*

Professor CARY claimed that "authorities" are material in matters of science, and to teach only what each one *knew* was not all of knowledge. Men, as authors, may be in error, and it argues well for the soundness of their philosophy, that they frankly admit their mistake when shown. For it is in vain to contend against truth ; in fighting against truth we do but contend against GOD ; and whoso contends with GOD, as manifested either in his works or his word,

is sure of defeat. But much of our scientific knowledge depends upon the testimony of others. Science has its place, theory its place, and testimony its place; we therefore may rely upon scientific authority as ground for affirmation. Mr. CARY then adduced and read instances and views from the Iconographic Encyclopedia, RHIND, McCOSH, SCHLEIDEN, etc., going to sustain the views he advocated.

The discussion on these interesting and intricate points in the economy of vegetation as conducted before the Society, has exhibited much learning and elaborate research. Both Professor WARD and President CARY have won new laurels in the scientific ability made manifest on their parts respectively, and the Society have shown great and increasing interest in the topics investigated.

The subject of holding a Horticultural Exhibition being mentioned, it was ordered, on motion of Mr CARY, that the subject of a fall exhibition be the special order of the day at the next meeting.—Adjourned.

SATURDAY, March 28h.

Vice President Doctor STURM in the chair.

After the minutes of the last meeting were read, Mr. WARD rose to a question of privilege and remarked that his views and statements had been incorrectly given, in the matter of the discussion held before the Society with Mr. CARY, and desired the privilege of having the same corrected, to conform to his views and statements as actually presented. Whereupon, on motion of Mr. MULLET, Mr. WARD was requested to bring in, at the next meeting, the notes and minutes of his essay, in order that the views and sentiments thereof might be more clearly exhibited and truly set forth; and the question of privilege was accordingly continued.

EXHIBITED.—By Mr. ERNST, a few grafts of a native Plum from Iowa, by favor of G. H. GAINES, Esq.: said to be very superior.—Also, some seed of the Chinese Sugar-cane, and some seed of the long-podded Ocar; a fine variety. These were distributed by the Council. Mr. ERNST also presented several varieties of Peach branches with the blooms developing, showing promise of a fine crop.

Hon. V. P. HORTON, of Pomeroy, placed before the Society for distribution a can of the Cork Oak Acorns and a can of grafts of the St. Catharine Prune, received from France.

The Fruit Committee, by Mr. HOOPER, their Chairman, reported

two seedling apples from Mr. MULLET. One is a very beautiful fruit; color, bright-yellow ground, with a brilliant red blush; size, rather below medium; form, round, rather flattened, a little irregular; flavor, pleasant, but rather tart, owing chiefly, no doubt, to its not being yet mature; excellent for cooking, and a very long keeper. The other is quite small; color light-yellow; form, nearly round; flavor, pleasant, tender and rather sweet.

On motion of Mr. REEDER the special order of the day, being the subject of the next annual fair, was laid over till next meeting.—Adjourned.

SATURDAY, April 4th.

President in the Chair.

After the minutes were read, the President announced Professor WARD's correction of views attributed to him in the late discussion, as in order; whereupon Prof. WARD said that, as far as any personal feeling was concerned, he would be quite unwilling to trouble the Society with the present matter. But as others might be misled in relation to his views and sentiments, he felt that a few words were called for in self-justification.

The Corresponding Secretary laid before the Society "Com. PERRY's Japanese Expedition," lately published by order of Congress, a beautiful and valuable addition to the library, received from Hon. T. C. DAY, to whom the Society tendered a vote of thanks for this most acceptable favor. Mr. ERNST announced that on next Saturday he will present for distribution some seed of the Autumnal Marrow Squash, with more seed of the long podded Ocar. The President laid on the table a "Treatise on Wire Fencing," known as "The Lowell Wire Fence," which had been sent to the Society.

The special order of the day was called, being the subject of the autumn exhibition, and Mr. CARY moved the following resolution:

RESOLVED, That we hold no fall exhibition as a Society, but that in accordance with overtures made to the State Board of Agriculture, we unite with them in making the exhibition at the State Fair, in its floral, fruit and other departments, second to none yet held in this, our noble Agricultural State.

To this Mr. HATCH offered as an amendment:

RESOLVED, That the Council are hereby authorized to make arrangements for the fall exhibition of this Society in conjunction with the exhibition of the State Board of Agriculture, and report such arrangement to this Society at as early a period as practicable.

The resolutions received much careful consideration and argument from various members, and Col. CALDWELL moved to lay these res-

olutions on the table, and that the Council be instructed to ascertain the conditions on which this Society can co-operate with the State Board of Agriculture at the Autumnal fair and report at the next meeting. Carried.

The exhibition of fruit was remarkably fine, and chiefly from Dr. PETTICOLAS, of Clermont County. Mr. BUCHANAN presented the White Pippin, White Winter Pearmain, Vandervere Pippin, Pryor's Red, Wine Sap and a seedling of his own; also a package of spring Barley for distribution.

FRUIT COMMITTEE REPORT.—Mr. HOOPER, Chairman of the Committee on Fruit, reported as follows:

From Dr. T. V. PETTICOLAS.

Forty varieties of apples all in good condition; the largest display ever made before the Society at this season of the year.

Among this splendid list, is an apple called by Dr. PETICOLAS, Lane's Swarr. It resembles much the old Dutch Swarr. This fruit is quite large, of rich golden yellow, in perfection in May, of a yellow flesh, rich, jucy and delicious, form nearly round and a little flattened, a good bearer, fine, strong and beautiful grower, and much and deservedly sought after. Also the Parker apple, a great cooking apple, as well as a very good keeper, sub-acid, great annual bearer, beautiful tree and foliage; a new Ohio Seedling; but preeminently above all in beauty, and good condition, stands the "Smith's Cider" next is "White Pippin;" then comes in the celebrated "Berne Beauty" and "White Winter Pearmain."

Mr. MOTTIER exhibited some of the finest specimens of Rawle's Janet ever shown here.

Mr. BUCHANAN's Seedling appears to be from the Gilpin, but is more tender, and a better apple.

Mr. BUCHANAN, from the committee on the merits of the Chinese Sugar-cane, reported progress, and the committee was continued.

Mr. STOMS presented a small box of Chinese Yams, received from the Patent office for distribution.

Mr. ERNST presented for distribution seed of the Sugar Millet and ong-podded Ocar.

Dr. WARDER exhibited some of the rough purple Chili potatoes, a variety originated by C. E. GOODRICH, Utica, New York, from South American seed—a superior variety, hardy and prolific; also, the Ash-leaved Kidney, a good old sort, early and prolific; and the

California, brought from the Pacific coast by T. DEVIN, Esq. Some of these *pommes de terre* being cooked and brought up warm, presented matter evidently quite to the *taste* of the members, in the discussion of which, asperities were, for once, lain aside, and the discussants became unusually "*mealy-mouthed.*"

Mr. BUCHANAN laid before the Society a note from Mr. F. BALL, of Clifton, with some seed of the "turnip-rooted parsnip," concerning which Mr. BALL says, that "it matures earlier than the common variety, is much more tender and of more delicate flavor. When matured, it may be removed from its bed by the hand, without digging. I raised a fine bed of them in 1855, and intended to have sent to the Society some of the root; but on inquiry for them early last spring, I found that almost all had been devoured by one of my "hands." (*Memo:* the common fate of the choicest fruits and vegetables!)

In relation to the autumn exhibition, Colonel CALDWELL, as Chairman of the Council, reported that a letter—a copy of which he read—had been sent to the State Board of Agriculture, but that no answer had been received by the Council; and stated that from conversations held with individual members of the Board, he was prepared to say that no difficulty would arise in adjusting arrangements for exhibition in conjunction with the State Fair; and, therefore, moved to call up the resolutions laid on the table last week, proposed by Mr. CARY, which motion carried.

Mr. WARD then moved an amendment to Mr. CARY's resolution, so that the same should read thus:

"*Resolved*, That we hold no fall exhibition as a Society, but that in accordance with overtures made to the State Board of Agriculture, we, as individuals, unite with them in making the exhibition at the State Fair, in its floral, fruit and other departments, second to none yet held in this our noble agricultural State."

And the resolution thus amended was adopted.

The following communication was received and read by the President.

"CINCINNATI, Saturday, April 11, 1857.

To Prof. J. A. Warder, President of the Cincinnati Horticultural Society:

DEAR SIR—Being about to set sail for England, with no certain purpose of returning to America, I hereby respectfully tender my resignation as a member of the Council of your Society. And, in

thus taking leave of the Society, allow me to submit my best wishes for the complete success of the Association in their laudable purposes, and to assure the members thereof, that I will carry with me the most agreeable recollections of my association with them, and will cherish the hope of their continued happiness and prosperity.

Respectfully,

GABRIEL SLEATH."

On motion, Mr. SLEATH's resignation was accepted, and thereupon the following preamble and resolutions were presented by Colonel CALDWELL, chairman of the Council:

"WHEREAS, It is now announced that our friend and most worthy fellow member, Mr. GABRIEL SLEATH, is about to set sail for England, and whereas, he has, while with us, earned for himself, by his sound scientific and practical knowledge, a distinguished position among horticulturists, and has, by his untiring efforts in behalf of this Society, aided most materially in giving it prosperity and renown, therefore,

Resolved, That Mr. GABRIEL SLEATH be elected an honorary member of the Cincinnati Horticultural Society; and

Resolved, That the Secretary furnish to Mr. SMITH a proper certificate of the Society's transactions in this behalf."

The preamble and resolutions were unanimously adopted.

The Librarian announced that Mr. SLEATH had presented some fifteen volumes of valuable books to the Society's library, for which a vote of thanks was tendered.

The Special Committee on "Live Fences," by Mr. ROBB, their chairman, submitted the following interesting and valuable report:

"*To the Cincinnati Horticultural Society:*

Your Committee respectfully report, that on a careful examination of all the different plants that have been presented for our consideration for growing live fences, and after numerous experiments we arrive at the conclusion that the

Osage Orange (*Maclura Aurantiaca*) a plant deriving its name from Wm. McCLURE (a Scotchman of some note,) the Bois d'Arc of the French and the English Bow-wood, contains more than any other plant all the requisites for neat and substantial hedging.

Nativity.—The *Maclura* is found in great abundance and of most luxurious growth near Red River, in Texas and Arkansas, and abounds in all the country immediately east of the Rocky Mountains, north thirty-four degrees north latitude.

Acclimation.—Numerous and oft-repeated experiments have proved the fact that the *Maclura* will flourish well in all parts of the United States, from Maine to Florida.

Planting the Seed.—The ground must be thoroughly prepared in the best gardening order; then plant the seed in drills eighteen or twenty inches apart, with about twelve seeds to the foot in the drills —planting in October or November. For *spring* planting, the seed must either be frozen through the winter or soaked at the time of planting. If the seed is to be frozen it should be mixed with sand and placed in boxes that will not hold water, and then exposed to the freezing weather through the winter, and planted as soon as they begin to sprout in the spring. If the seed is to be soaked, as soon as the ground grows warm in April, put the seeds in a tight vessel, and cover them with hot water, (not boiling,) and soak them in warm water about seven days, changing the water once or twice to prevent fermentation. Then put the seed in shallow boxes and mix with sand; keep moist and warm until they show signs of sprouting, which will be in a few days; then plant as before recommended; but be careful never to select ground that will crust or bake.— Either of the above modes of planting are perfectly reliable.

Setting the Hedge.—As soon as the ground becomes settled in the spring it should be plowed to the depth of twelve or eighteen inches, and thoroughly pulverized for the reception of the young trees. A line should then be stretched, and the trees carefully removed from the nursery, and planted with strict regard to uniformity of size and distance.

Distance of Planting.—The *Maclura* is a third-rate forest-tree, and, as such, requires either natural or artificial *dwarfing*. The former is preferable, and can be best accomplished by close planting.— For this purpose we recommend planting the trees six inches apart, in a single row. The plant thus naturally loses the nature of the tree and grows into a shrub, and still retains all its wonted health and vigor, and makes a good protection sooner and at a less cost than any other mode of planting. Great care should be taken to fill all vacancies as soon as they occur, that they may have a uniform growth and thus all gaps and weak places in the fence will be avoided.

Cultivation and Pruning.—After planting, the hedge should be cultivated with care for two years, keeping the ground well pulverized and clear of grass and weeds. The first winter after plant-

ing, the trees will be liable to heaving up, by the action of the frost. To guard against this, the ground must be well drained by running a furrow with the plow on each side of the hedge, throwing the earth toward the plant. After the trees have thus grown two years, they have then acquired a strong and vigorous root, and you may begin your system of heading down and training. In the spring of the third year the trees should be cut down to the surface of the ground. Each root will send up a number of strong, thrifty shoots; and as soon as these have grown to the hight of one foot, cut them off within two inches of the ground. The shoots thus cut off will send up an additional number of sprouts from the place of cutting. When these have grown ten or twelve inches, cut them off down within two inches of the last cutting; and thus, continue, pruning several times during the season, always keeping in view the final shape and appearance of your hedge—preserving a fine proportion and regularity of form from the beginning. First secure a good and sufficient base; then let your fence rise gradually and beautifully, and train it into whatever form your fancy may dictate.

WILLIAM ROBB,
R. BUCHANAN, } *Committee.*"
F. G. CARY,

On motion, the report, was received and ordered to be printed.—On this motion several gentlemen remarked that while they set high value on the clearness and conciseness of the report, their experience and observation were yet too limited to allow them to express any decided opinion touching the views presented in the report.

The President, Dr. WARDER, and Mr. MEARS remarked that they desired to be understood as protesting against the views of the report as to the spaces of planting, preferring at least twelve inches space between the plants.

SATURDAY, April 18.

Vice President STOMS in the chair.

The Corresponding Secretary presented a package of pamphlets on the Chinese Sugar-cane, from R. PETERS, Esq., of Georgia; a package of Seeds from the Patent Office; also, from the Honorable J. SCOTT HARRISON, a can of St. Catharine Plum-grafts, (spoiled on their passage.)

Mr. BUCHANAN, Chairman of the Special Committee, in relation to the Chinese Sugar-cane, submitted the following report, which was accepted and ordered to be printed:

CHINESE SUGAR-CANE.—(*Sorghum Saccharinum.*) The committee to whom the subject of this new article in American Agriculture was referred respectfully present the following

REPORT:

1. The true plant has black seed, borne on a loose panicle resembling Broom-corn, but with a more compact head.

2. It can be cultivated like Indian Corn (Maize) and planted closer if desirable. The yield is greater in stalks, than is that of corn, but less in seed, being from twenty-five to fifty bushels per acre.

3. The seed may be made useful as food for poultry; and, when ground, to mix with chopped feed for cattle, and horses.

4. The great value of this plant is in the sacharine matter contained in the stalk; for this it will be cultivated to make molasses, and also to feed to cattle, both as green and dried fodder.

5. It will produce a sugar technically termed *glucose*—equivalent to grape or other fruit-sugar, but not so rich as that made from the common sugar-cane, and far more difficult of granulation. This is, indeed the great obstacle found in the production of sugar from this plant.

In conclusion, your committee believe from the best information that can be now obtained—but without any practical experience of the members—will be valuable to cultivate as a food for cattle; and, where fuel is cheap, to convert into molasses; but doubt whether it can ever come into successful competition with the common sugar-cane, to make sugar in ordinary seasons.

For further information the members are referred to several books and pamphlets, recently published on this subject, deposited in your Society's library by the committee, and for sale in the several book stores in this city. Agriculturists are recommended to try the Chinese Sugar-cane, on a moderate scale at first, as experience alone can test its value and adaptation to the soil and climate of the different sections of our widely-extended country. The works to which the committee would refer for further information are: HYDE's book, PETER's pamphlets, REDMOND's pamphlets, and other works not now before the committee.

R. BUCHANAN,
J. P. FOOTE, } *Committee.*
F. G. CARY,

MR. WARD moved to reconsider the vote of the Society, at the last meeting, on Mr. CARY's resolution in relation to holding the Fall Exhibition, which motion was carried, and the question, recurring on the resolution, was warmly discussed, and finally, on motion, was laid on the table, to be made the special order of the day at the next meeting.

METEOROLOGICAL TABLE.

Observations made at Farmers' College, College Hill, Hamilton County, Ohio, Latitude 39° 19', W. Lon. 7° 24' 45" for the month of March, 1857, by Prof. R. S. Bosworth. Hight of Station above the Sea, 800 feet.

	Barometer corrected for temperature & capillarity.				Open air thermometer.			
	7 A. M	2 P. M	9 P. M	Mean.	7 A. M	2 P. M	9 P. M	Mean.
1	28.766	28.766	29.100	28.877	31.5	33.5	18.0	27.3
2	29.365	29.254	29.300	29.345	6.0	18.5	15.0	13.2
3	29.200	29.025	29.008	29.077	13.0	37.0	30.0	26.6
4	29.064	28.973	28.900	28.980	31.0	47.0	43.0	40.3
5	28.865	28.835	28.980	28.893	40.0	47.0	28.0	38.3
6	29.054	28.965	29.176	29.065	17.0	32.0	14.0	21.0
7	29.330	29.360	29.375	29.355	11.0	25.5	12.0	16.2
8	29.360	29.205	29.023	29.196	14.0	36.0	33.5	27.8
9	28.833	29.041	29.218	29.030	33.0	28.0	14.0	25.0
10	29.206	29.075	29.003	29.095	5.0	35.5	18.0	19.3
11	29.010	29.035	29.313	29.120	23.0	28.0	19.5	23.5
12	29.478	29.462	29.445	29.460	11.0	29.0	20.0	20.0
13	29.366	29.210	29.128	29.235	21.5	42.0	32.0	31.8
14	29.103	29.070	29.114	29.096	30.0	45.0	34.0	36.3
15	29.145	29.052	29.012	29.070	35.0	52.0	40.0	42.3
16	29.050	28.970	28.995	29.005	34.5	51.0	37.0	40.8
17	29.021	28.975	28.948	28.981	33.8	56.0	54.0	47.9
18	28.810	28.855	28.855	28.840	51.0	43.0	34.0	42.7
19	28.976	29.024	29.071	29.024	32.5	37.0	25.0	31.5
20	29.035	28.758	28.750	28.847	29.0	59.0	60.5	49.5
21	29.266	29.316	29.351	29.311	37.0	55.5	42.5	45.0
22	29.344	29.118	29.005	29.156	43.0	70.0	61.0	58.0

	Clouds—course & velocity.						Wind—direction & force.			Rain & melted snow.		
	7 A. M.		2 P. M.		9 P. M.		7. A. M.	2 P. M.	9 P. M.	Hour Began.	Hour Ended.	Am't Inch.
1	1	Cirri.	5	W. 8	5	NW. 8	WSW. 3	W. 7	N. W. 6			
2	0	0	0	0	0	0	N. W. 5	N. W. 3	0			
3	2	Cirri.	4	S. 2	10	Haze.	0	S. 1	S. W. 1			
4	10	S.W. 5	4	Smoky	10	S.W. 6	0	S. 1	S. W. 2			
5	10	W. 8	10	Nim.	5	NW. 5	0	S. W. 6	N. W. 3			
6	1	N.W. 5	5	W. 4	2	N W 10	N. W. 5	W. 5	N. W. 7			
7	2	N.W. 3	3	W. 6	0	0	W. 1	W. 2				
8	2	Cir. St.	2	Cirri.	9	W. 4	0	S. 1	S. 1			
9	10		8	NW. 9	0	0	S. W. 3	W. 5	N. W. 1	4½ A. M.	8 A. M.	0.400
10	0	0	5	0	0	0	0	S. 1	0			
11	0	0	4	N.W.	5	0	W. 1	W. 3	N. W. 3			
12	0	0	0	0	0	0	W. 1	W. 1	0			
13	1	S. 1	10	0	8	0	0	S. E. 1	0			
14	0	0	4		0	Smoky	0	S. 1	0			
15	0	Smoky	0	0	0	0	S. 1	S. 1	0			
16	4	W. 2	9	W. 5			0	S. W. 1				
17	2	Strat.			10		0	S. 1	S. 1			
18	10	S.W. 2	10	N W. 4	10	N. W.	0	W. 3	N. W. 2			
19	10	N.W. 8	10	NW. 5	0	0	N. W. 3	N. W. 6	0			
20	5	Cirri.	5	Haze	10	Smoky	S. E. ½	S. E. 5	S. 2			
21	0	0	0	0	0	0	W. 1	W. 1	0			
22	2	0	2	Cirri.			0	S. 2	S. 3			

23	29.075	29.054	29.040	29.058	61.0	77.0	55.0	64.3		Smoke		Smoke	10	Nim.	S. 3	S. 2	0	5 P. M.	7½ A.M.	0.890
24	29.025	29.125	29.180	29.110	52.0	59.0	45.0	52.0	10	S.W. 4	5	W. 5	0	0	S. ½	WNW. 2	WNW. 1			
25	29.236	29.179	29.249	29.221	36.5	48.0	38.0	47.0	2	Cirri.	3	N.W.6	0	0	N. W. 2	N. W 3	N. W. 1			
26	29.265	29.192	29.162	29.206	29.5	46.0	35.0	37.6	0	0	1	Cirri.	0	0	N. W. 2	N. W. 1	N. W. 1			
27	29.182	29.110	29.126	29.140	37.0	53.0	42.5	48.3	3	N.W.2	0	0	0	0	0	0	0			
28	29.159	29.091	29.144	29.131	39.5	56.0	43.0	36.3	0	0	0	0	0	0	0	W. 4	0			
29	29.224	29.220	29.275	29.240	37.0	52.0	42.0	43.7	0	0	0	0	0	0	0	N. 2	0			
30	29.435	29.336	29.330	29.377	34.0	52.0	37.0	41.0	0	0	0	0	0	0	N. E. 1	N. 1	0			
31	29.296	29.130	29.024	29.150	39.0	58.0	44.5	47.2	9	Strat.	10		10	Nim.	0	S. 1	S. W. 1	6 P. M.	In Night.	0.330
Sums.				902.691				114.04												1.620
Means.				29.120				36.8												

REMARKS ON WEATHER.

2. Minimum Ther. 5°.
4. A few flakes of snow last Night.
8. Ther. 1½° at sunrise.
15. A few drops of rain last night.
16. A very little rain at 9 A. M.
18. A violent gale at 11 P.M.
21. A violent thunder shower at 5, and another at 7 P. M.
22. A dash of rain at 6½ A. M. and at 7 A. M.
26. Sanguinaria, (blood-root) in blossom south side of hills.

EXPLANATION.—The state of the sky is indicated in this table by numbers from 0 to 10; 0 signifies perfectly clear sky. 0 that it is entirely covered with clouds, and intermediate numbers show the number of tenths clouded The direction from which the wind blows is shown in the initials of the points of the compass. Its force is indicated by numbers; 0 meaning a perfect calm, and 10 the most violent hurricane.

MONTHLY EXTREMES.

	MAXIMA.				MINIMA.			
	7 A. M.	2 P. M.	9 P. M.	Month.	7 A. M.	2 P. M.	9 P. M.	Month.
Barometer, . . .	12th. 29.478	12th. 29.462	12th. 29.460	29.478	1st. 28.776	20th. 28.758	20th. 28.750	28.750
Thermometer . .	23d. 61.0	23d. 77.0	22d 61.0	77.0	10th. 5.0	2d. 18.5	7th. 12.0	1.5

THE WESTERN FRUIT BOOK.

E. J. Hooper.

We have examined, with some interest, a new Western Fruit Book, by E. J. Hooper of Newport, Kentucky. This work purports to contain a compendious collection of facts from the notes, and experience of successful fruit growers throughout the West.

As a first work emenating from our press, it may be regarded a fair Manual for the Western gardner and fruit Culturist.

It is a difficult task to compile a book of this kind, especially that will please every body, as it is literally in this case, the *tastes* of men which he must consult, and which in relation to fruits are quite diverse, and often opposite. Hence, however deserving an Author may be in these matters, he will subject himself to criticism. While we would commend the work before us to public patronage, we are compelled to say, it seems to have been executed in rather a hurried manner, and contains numerous errors.

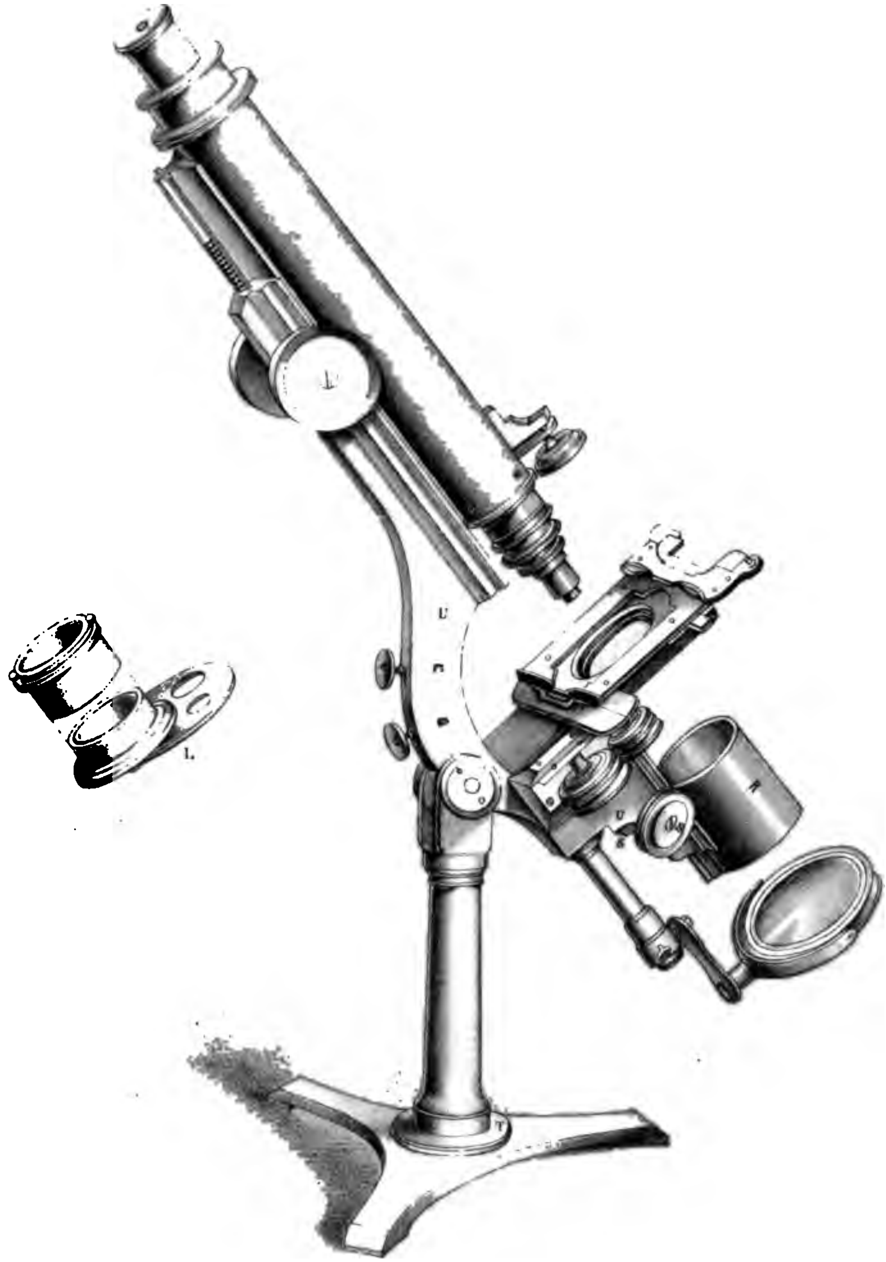
The cut denominated McAvray's Superior Strawberry, has no resemblance whatever to that fruit, but is evidently intended as Longworth's prolific. We need a work of this description, endorsed by a Congress of our best Western fruit growers, ***especially*** adapted to the *West.*

TERRA-CULTURE.

Prof. R. Comstock, of Mabbittsville, New York, will disclose the Principles of "Terra-Culture," as held by him, at Mason, Warren Co. O., on the 6th. of May, at 10, A. M. on the invitation of one-hundred and thirty, besides some twelve persons who have previously heard his disclosure. Also at Mount Vernon, Knox Co. O., May 16th, at ten A. M. and at Plesant Ridge, Hamilton Co. O., May 20, at 10 A. M.

He finds the [illegible] subject greatly on the increase.

14*



Burgess & Forbes, [illegible] Main St. Cin. O.

LARGE ACHROMATIC MICROSCOPE.

made by Smith & Beck of London

FOR FARMERS COLLEGE.

THE CINCINNATUS.

VOL. II. JUNE 1, 1857. NO. 6.

OUR COLLEGE, ERRORS IN RESPECT TO ITS OBJECT AND AIM.

EDUCATION, universal education, may be said to be the watchword of the age. Hence a system of common schools more or less extensive, and free to all, is established in many of the States of our great republic. And it is pleasing to know, and record the fact, that from our republic's first dawn, indeed from the day our forefathers set foot on Plymouth rock, learning and religion have been regarded as the firmest pillars of our strength and the stability of a nation. It was the very genius of the reformation to inspire these views, and to adopt them in practice.

An *educated class* should ever be regarded as a barbarism and a heathenism, *an educated race* the only Christian idea, and the lowest end worthy to be sought, by a Christian nation. It is in consequence of such faith and a corresponding practice that our progress has been so rapid, our prosperity so permanent.

It is the mission of our free American Republic to educate not a clique or caste, but to educate the race in such a way as most effectually to prepare man, every man, for his life-work—to educate the leaders, at least of the so-called industrial pursuits, in such manner, and to such extent as to stand alongside of those in the learned professions—not as talkers, as debaters, but as efficient, educated workers.

The question comes up, is such a work practicable? Is it demanded? As to the importance of the latter, none will question.—As to the former, it is yet unsolved. There has been a world of talk and speculation about it, Senates have discussed it, the leading minds in two hemispheres have of late held forth its importance;

but it must be acknowledged that as yet, but few, very few, tangible results have been realized.

In searching for the causes why there has been no more, or marked progress, or flattering manifestations, a fruitful source will be found to be in our system of high school instruction, in our University education, which, notwithstanding all its defects; confers benefits and blessings, great, salutary and wide-spread; while at the same time as a system, it has been too contracted, too exclusive, and too stereotyped.

Harvard, Yale, and Dartmouth, are the types of the four hundred Colleges that now dot the different States of this Union. And all these were planned and planted after the fashion and with the very design of those in the *Fatherland.* They have all been for the education of the few, the students of the learned professions. The course of instruction is especially adapted to these, and so stereotyped are they as to text books, that the number and names, and pages, to be perused, to be called a scholar, can neither be increased nor diminished. These institutions are still multiplying with unexampled rapidity, all over our land, uniformly copying the programme of studies from each other, and making as the "sine qua non," of graduation, and the obtaining a diploma, a certain and fixed quantum of Latin, and Greek, guaging the extent of a man's mental capacity by the amount of Latin and Greek stowed away. The result of such a course, chiefly linguistic, must continue to be as it has been, to multiply the crowd of flippant talkers, at the expense of educated scientific workers. Our men of science must make themselves such without their aid, countenance or support. Our Colleges, in all their arrangements, hold out their rewards and highest honors to the students of ancient lore. Society sanctions their decisions, and bestows upon them its patronage, and in turn confers her honors upon the self same class, generally after they have read BLACKSTONE, or turned over a few pages of law. This is the high road to political preferment, and these are the premiums offered, that glitter in the eyes of multitudes of our young men, as soon as they step aside to secure what is called a liberal education. What will not inveterate custom joined to the prestige of great names, effect!

Take here another stand point of observation. While many circumstances have been averse to profound erudition, especially in the domain of science, the balance has still been in its favor, and in despite of the contracted views, and want of encouragement of the

learned towards the votaries of science; yet many great names adorn our country's annals, who have arisen to eminence by their own unaided efforts. And so numerous are the examples of this kind, it has greatly lessened the supposed absolute necessity of the mental training furnished by these institutions, not only for advancement in the arts and sciences, but even for the successful prosecution of the learned professions themselves.

We are often led to inquire, whence the boldness of thought, the originality of genius, the precocity of intellect often manifest, and meeting us among those who have not had great advantages *for intellectual culture* in early life?

Among other causes favorable to such development, is that here was a continent fresh from the hand of the Almighty. Its forests, and rivers, and mountains, calculated by reason of their extent and gigantic proportion to lead forth the mind to unexplored hights, and depths, and place it in a new track, and while amid trials and privations our fathers came here, originally to enjoy peace of conscience, and escape persecution, yet the very circumstances in which they were placed, were calculated to cultivate in an eminent degree, self-reliance, and develop those very thoughts, and principles which give majesty and grandeur to our civil, social, political and religious institutions. Our form of government, in its inception and adoption, is one of the mighty results of minds thus nurtured, thus educated The revolution of seventy-six was a revolution that ran deep into the forms of social order, and civil authority, which had long prevailed and caused the sundering of ties, and the modification of principles, at least in the extent of their application which had been recognized supreme for centuries. But this revolution of social order and civil authority reached not to the higher literary institutions. They still remained and held on their way as they had existed in the morbid monasticism of the old world; with but little difference or amelioration.

The College is still planned, endowed and directed with special regard for the few, not the many.

Our complaint here is, not that our course is too liberal or extensive, but, that while science is for the million in its influence and adaptation—while amid these Colleges and Universities its most marked discoveries have been outside their routine, persistently the student of essentially a literary course should be regarded as deserving of all honor, and claim to himself exclusively, the appellation of being

educated, *learned*—that it should still require the same number of pages of HOMER and VIRGIL, of CICERO and HORACE to the end of the chapter, to be entitled to the degree of Bachelor of Arts, in despite of whatever else the student may lay claim to; as if to successfully master these, was all of scholarship, all of liberal learning.

A revolution is now going on, silently, it is true, yet none the less surely; and although the devotion to ancient forms and customs, especially among the learned, is deep and strong, yet we find not the same homage now rendered it as formerly. Amid the march of human improvement, incidental upon the developments of physical science, and the multiplication of subjects, not only of study but those well calculated to discipline the mind, it is not thought necessary that all should follow the same beaten track, in order to become eminent and learned. And though the temple of science has not yet been thrown wide open to its votaries, and equal privileges granted to them with the lover of literary honors, yet its mighty results, and wide-spread influence is doing for them and for it, what the College or the University can neither claim or accomplish, and which is calculated to place the aspirants of scientific honors in their true position.

It has been to meet the felt wants of our age, that a more liberal course of scientific training has been devised, and adopted in Farmers' College. And while we disparage no department of liberal learning, but have furnished in our institution a full curiculum of classical studies to the aspirant to literary honors, we have nevertheless cut off what to the scientific student would be adventitious and unnecessary. We have not done it at the expense of the forfeiture of equal honors to his scientific rival.

And while the Trustees and faculty of the Farmers' College are fully imbued with the faith that there is no royal road to knowledge by an easier or speedier route, than has hitherto been adopted, and while they freely admit that there are certain indispensable elements and instruments of knowledge, which all should acquire, and certain general principles, and departments, equally useful to all, yet they as firmly hold that the study of the dead languages is not one of the indispensable elements that must lie at the basis of all modes of liberal culture, without which, the scholar must forego his immunities and honors They hold that the multiplied subjects, the numerous sciences now introduced into the course of every College catalogue, can neither be mastered, or rendered eminently

useful in the short time allotted; and that hence, discrimination must be had, having some reference to the tastes, talents, inclinations, capacities and pursuits of those to be educated.

That one of the fundamental objects of all education, that of forming a habit of investigating thoroughly what comes before the mind, is now unattained, and that this habit once formed, the man will become *learned,—well educated,*—sooner or later—college or no college. Consequently, that as you can't study every thing in four years, after the common and universal requisitions shall be made, such divergence may be had as will enable the student to study some of these sciences now pursued more thorougly, and practically.

Our object in writing the present article, is, to correct some prevalent errors of the aim and design of our yet young and flourishing Institution. Hence, we have been particular in our introductory remarks to show on what principles our plan has been based, and that we occupy no equivocal ground.

To accomplish, then, our object, we have adopted two courses of study, securing equal time for their completion, viz: four years after the usual preparatory studies required by our colleges. The one eminently scientific, embracing the modern languages, the other linguistic, embracing the usual literary course with its full quota of Latin and Greek. The completion of either of which courses will entitle to equal college honors.

To accomplish fully our object in our scientific investigations, and adapt our institution to a far larger class of aspirants to profound attainments, we of course have given precedence to the studies suited to the applications, and full development of agricultural science. Our farmers embrace four-fifths of our population. As a class they have jogged on thus far almost without even the commonest forms of knowledge, to say nothing about science. For the benefit of this numerous class, we have secured a farm of varied soil and surface, to be appropriated to experiments in grain, grasses, fruits and vegetables, embracing a complete botanic garden of the trees plants and shrubs of our climate, not as some have ignorantly conjectured—for such has never been written—to teach boys how to work—to instruct them in the common manipulations of the farm, which they can better learn at home—but that the young men of our country, who would become adepts in science, may not only learn the doctrines, and principles of our text books, but the applications of these in practice; and thereby acquire a habit to make all knowl-

edge useful. At great outlay, and to give additional interest to this department, the directors have erected a Hall containing rooms for the accommodation of the teachers in this department, for class and lecture rooms, cabinets, apparatus, libraries, etc. An operating Laboratory, first in the West, if not in the Union, with all the means and facilities for fifteen or twenty operators at a time—the Students themselves preparing their own reagents, and performing the various analyses under the direction of competent teachers and text-books. Thus each student must become a manipulator.

Our Farm, Gardens and Cabinets, will embrace all that the Chemist, Botanist, Geologist and practical agriculturist require, fully to illustrate and apply the principles evolved in the lecture room. In the Botanic department we have already made extensive collections. We have secured from our patent office the promise of all rare seeds, cuttings, tubers, etc. We have in process of testing at this time, some forty-six kinds of wheat, a like number of grasses, and numerous other varieties of seeds. We have already set over two hundred kinds of pears, sixty kinds of cherries, several hundred kinds of apples, numerous peach, plum, as well as numerous varieties of smaller fruits.

We have commenced cabinets of insects, birds, minerals and fossils. We have secured one of the finest cabinets of shells in the United States, embracing over five thousand species, and more than fifteen thousand individuals. Our apparatus for analysis and illustration is good, and is being daily improved.

The microscope herein described, and just obtained from London, is one of the finest made. It is the purpose of our directors to make our department of science, in all respects, complete. And here another error, we trust, will be corrected, in relation to our object, that of proposing to resurrect and dignify into new importance the defunct system of manual labor institutions. This has formed no part of our plan. Views so unphilosophical, and which have fully proved themselves such in practice, have not been entertained, but are regarded by our Board as Utopian.

True, our department furnishes, to those who desire it, profitable as well as instructive labor, and some have improved it, and will continue to improve it to their advantage. But this arrangement will be indiscriminately for the benefit of those who enter this department or not, and will aid many industrious young men to educate themselves. It is to the young men of our country, well advanced in

preparatory training, to whom we hold out especial inducements, and are prepared to furnish rare opportunities; no others are prepared for our Agronomic course. To enter upon this course with profit, it will require at least a course of three years preparatory study, in addition to the attainments which can be made in common schools.

Our object, then, it will be seen, is to establish here, in connection with a full literary course, a parallel scientific course of instruction; something similar to the polytechnic institutions of France, yet by no means a copy. For we hold that we cannot model American institutions, and least of all our literary, implicitly, nor yet with any very close resemblance upon those of any foreign State, be it Grecian or Roman, English or European, Protestant or Catholic, unless we wish also with them to incorporate, among us all their elements of civil and social life. Yet this is the very thing we have been doing, especially as regards our higher institutions. And we have also reaped the appropriate results, in our present moral and political degeneracy, in spite of all our blustering and bagatelle Fourth of July and anniversary orations.

The old fogy is ready to hold up both hands and cry, away with such heresy—such a course as you propose can not be pursued without first completing the ordinary four years' collegiate drill.—Could such preparation be had, and the mind kept uncorrupted, we should not object. But who will say that in this fast age, such object could be realized. You will never dragoon into the old drill a tythe of the number that would pursue a liberal course of scientific training without it. Never, no, never. And after you had dragooned them into it, you could not induce them to direct their efforts to such end. Such intellectual millennium is further off than that of the lion eating straw with the ox. It is simply impracticable.

The education, the liberal education of the class for which we plead, is now left out of the programme of all our higher institutions of learning. The philosophy and faith of these institutions, on this subject, is identical with the Brahmin, and not that of the Savior of the world. And while we freely admit that there must be a great difference in the extent and amount of culture bestowed upon different individuals, according to their endless variety of tastes, opportunities and capacities, we utterly deny that there is a single profession, or pursuit on earth, that GOD has made it necessary for so many to follow, that admits the possibility, or affords the materials for a richer, and more varied culture,

or a profounder or more thorough development of all that constitutes the true man, and the truly great man too, than does the pursuit of Agriculture. Agricultural science in its length and breadth is the embodiment of all science. And yet, true as is this postulate—and let the man consider it well before he denies it—there is none in which the masses are more ignorant, and their intellectual wants less cared for.

We propose to the extent of our feeble ability an amendati of this great error, and the elaboration, and prosecution of a system less scholastic, less monkish; not atheistic, nor yet ecclesiastic; not Prussian, not French, not royal, not aristocratic, but truly and symmetrically American, Christian, industrial and universal. How long it may be considered fashionable to use the ordinary cant, and follow the sophistries of dead and buried ages; or how long the ghosts of those old systems may stalk abroad in this country, to inspire the credulous, or alarm the timid, we can not say. But this we are prepared to say, that we are fast receding from all but their forms, and approximating, as we trust, a higher, and more glorious era.

SUGAR FROM THE AFRICAN SORGHUM.

Interesting Facts Concerning the Sorgho or Chinese Sugar-Cane, and the Imphee—Specimens of Sugar Exhibited—Manures, etc.

The Farmers' Club was called to order at the rooms of the American Institute, at noon yesterday, Judge LIVINGSTON in the chair, and a large attendance of members present.

HORACE GREELEY introduced MR. LEONARD WRAY, of Natal, South Africa, who has had more experience in the culture of the various species of *Imphee*, (including the Chinese sugar-cane,) than, perhaps, any other European, and has succeeded in obtaining as fine crystalized sugar directly from the juice as those resulting from the Louisiana sugar-cane. He is referred to as the highest authority by M. VILMORIN, of France, COUNT DE BEAUREGARD, and the illustrious gentlemen of the Imperial Acclimation Society, and has visited this country, on invitation of a governor of one of our southern States, for the purpose of cultivating the varieties of the new sugar plant which he considers most valuable, and to introduce the methods, discovered by himself, for obtaining the valuable product of crystal-

ized sugar. His arrival at this moment of our first experience with the sorgho can not but be considered most opportune, and the very valuable information which he possesses will be of the first consequence in its prospective bearing upon our national revenue.

Mr. WRAY commenced by stating that he had discovered, growing wild upon the southwest coast of Caffraria, the curious plant *imphee*, which was in common use among the natives as an article of food. He had been so favorably impressed with its qualities as to undertake protracted journeys to collect new varieties, and met with such success, as to procure no less than sixteen distinct kinds of greater or less saccharine richness. Some of the more precocious ones will complete their growth in three months, while others require as long as four and five.

The names of the sixteen varieties are as follcws: *Nee a-za-na*, *Oom-se-a-na*, *Boom-ve-va-na*, *Shla-goo-va*, *Shla-goon-dee*, *Vim-bis-chu-a-pa*, *E-a-na-moo-dee*, *Zim-moo-ma-na*, *Zim-bu-za-na*, *E-both-la*, *E-thlo-sa*, *Boo-ee-a-na*, *En-ya-ma*. *Koom-ba-na*, *See-en-gla-na*, and *E-en-gha*. The first four of these are of quick growth, and will produce one crop of sugar at the North; the others are suitable for the South, and some of them will give two full crops.

For feeding to stock, Mr. WRAY says there are no crops possessing an advantage over these *Imphees*. They are fully equal to southern cane, and are greedily eaten by every description of stock. He had fed his horses, cattle and pigs on them. The idea has been advanced by some in this country that the *bogasses*, (stalks which have been crushed for sugar-making) would be good feed for stock, but Mr. WRAY had lost some animals from making use of them, and on opening their stomachs after death the fibrous Sorgho stalks were found to have formed into hard balls and accumulated in such indigestible masses as to cause death. If, however, the *bogasses* had been fed with the scum which is removed from the boilers, this bad effect would not have been experienced. If fed green, as are cured corn stalks, there can be no more profitable or nutritious article employed, and for this alone its cultivation would be profitable, These crushed stalks, or *bogasses*, make an excellent paper, and Mr. WRAY has samples in England which are superior to straw paper.

Judge MEIGS desired to know if there was much value in the seed. Mr. WRAY said that for a feed for fowls there could be no better, and that from his African Imphees very fine bread can be made. The Chinese variety is not so good for this purpose, because of the

bitter pellicle which surrounds the seed proper, lying under the outer black hull, but he had a process for obviating this difficulty. The seed would have an immense value for the manufacture of starch. The amount practically obtainable is forty five-per cent., and is more easy of extraction than that from the farinaceous Mexican corn; and from the ease of its manufacture and the high price of corn, it is evident that the "Imphee" will be cultivated to a considerable extent for this purpose.

The remarkable vitality of the plant is shown by a statement made by Mr. WRAY. He had a plantation of it on his estate in Africa, which he wished to remove to give place to a crop of arrowroot. The field was thoroughly plowed at the end of the season, and the stumps removed; but the few which escaped the notice of his workmen shot up into great luxuriance of growth, and in two months and five days had attained the hight of seven feet. As many as twenty-two stalks grew up from a single stump, and the juice of all these made as good sugar as the parent stem.

In our own country there have been similar instances during the past season. Mr. BROWNE, of the Patent Office, it will be remembered by those of our readers who saw the articles previously published in the *Evening Post*, states that five cuttings have been made in Florida from one set of stalks. In South Carolina, Georgia, Illinois and New Hampshire, three and two have been obtained; and we may safely calculate that as a fodder crop, both the Chinese and these new African varieties will give us at the North two crops of excellent nutritious forage.

Mr. OLCOTT, of the Farm School, asked if the coloring matter from the seed hulls could be procured in such quantities as to make it a profitable department of industry? Mr. WRAY replied, that as yet, the matter had not been definitely settled. He had not supposed it would; but more extended experiments might prove to the contrary. The taint is abundant in the envelope of the seed of the Chinese variety of sorgho. Fowls which had been fed on the seed were found to have been tinted even to the cellular structure of their bones.—Their dung was colored of a purplish hue, and could be readily distinguished in the yard from that of birds which had not partaken of the seed; but this peculiarity did not lessen its value as a food. He had not tried it as a feed for horses because of its extreme high price; and when he went to Kaffirland the natives told him not to feed horses on it as it made them "puffy." Mr. OLCOTT exhibited speci-

mens of ribbon colored with the dye from the hulls of the sorgho seed, and stated that he had scraped off some of the waxy efflorescence from the stalk, and it burned with a clear flame. Mr. WRAY said this production would not be of consequence, as the small quantity obtainable and the tediousness of the operation of scraping it from the stalks, would much more than counterbalance any profit from its sale. He thought the computations made by Mr. HARDY, the Director of the Imperial Nursery at Hanima, Algiers, could not be considered as at all practically valuable.

The seed heads should be thoroughly dried before the stripping of the seed is attempted, and can then be threshed out with flails in like manner as wheat, barley or other grain.

Professor MAPES inquired if the sap in the stalks will sour on exposure to the atmosphere, as is the case with the Louisiana cane, and if the crystallizable property was injured?

Mr. WRAY stated that on one occasion he had been absent from his estate when the canes were ready to be harvested, and his Kaffirs, thinking he would return within a day or two, had cut up and stacked his entire crop. He was not able to return, however, until after the expiration of a fortnight, and he then found that about one inch of either end of the stalks had soured; so, without further loss of time, he had set his men to work to remove their positions, and when the juice from them was boiled down, it made quite as good sugar as any previous sample.

The Zulu Kaffirs put the stalks into pits which they dig in the ground, and preserve them perfectly for several months.

In regard to the density of the sap, Mr. WRAY adverted to a trial which had been made in Martinique, upon the estate of the Count de CHAZELLE, the object of which was to decide the comparative densities of the sugar-canes from the celebrated Grand Terre districts and of Mr. WRAY'S *Imphees*, both of which had been grown by the Count. The result was that the latter showed a density superior to the former by three and one-half degrees. The sugar cane gave 7 deg. Baume. and the *Imphee* 10½ deg. This richness is quite remarkable, for ordinary Louisiana cane does not average higher than 7½ to 8, if we remember aright, and it shows what we may in future expect from the introduction of this valuable plant to the domain of our national agriculture.

The quantity of juice to be obtained from the stalks was dependent upon the power of the mill. Count de BEAUREGARD had sixty

per cent.; but his mill was an imperfect one. Under favorable circumstances as much as seventy per cent. might be calculated upon, and of this, seventeen per cent., was crystallized sugar. The quantity of sugar per acre he estimated at three thousand pounds, but both quantity and quality would be controlled by the perfection or imperfection of processes of manufacture. Mr. WRAY had discovered the only successful method of obtaining the sugar which has been made public. M. de MONTIGNY, Count de BEAUREGARD and others, had sought in vain for it, but he had been fortunate enough to arrive at a complete success, as was proved by the samples of sugar which he exhibited to the Club.

Several specimens were shown. One of them is not purged of the molasses, because Mr. WRAY desired to prove that the syrup from the *Imphee* possesses no unpleasant flavor. We tasted it, and found it very pleasant in flavor, reminding one of maple sugar. Another sample had been purged; it presented the appearance of fine *clayed Havana.* The crystals are firm and sharp, and the taste is not different from good Havanas, which are now selling in the New York market at 11 and 12 cents, by the quantity.

If Mr. WRAY is not amiss in his calculation as to the yield per acre, or if we can obtain but one thousand pounds, what an immense gift to American agriculture is he about to make? Our rapidly waning crop of sugar is at once exchanged for the greatest abundance, and a vast source of wealth is opened for our farmers. He has already expended some twenty thousand dollars in his experiments and attempts to introduce it into Europe, and it is to be hoped that his visit to our country may prove remunerative in proportion to the importance of his discovery to ourselves.

(For the Cincinnatus.)

AN EXPLANATION—GEOLOGY OF OHIO.

IT was announced, more than a twelve-month since, that a work on the Geology of Ohio, would be published by the undersigned, in connection with Dr. JOHN LOCKE, of Cincinnati. It was planned so as to embrace, more particularly, the Geology of the districts traversed by Rail Roads. But the death of that distinguished phi-

losopher has prevented the execution of the contemplated labors.—Allow me then Mr. Editor, while announcing the suspension of the contemplated enterprise, to present a single section, from the materials prepared, as affording to the agriculturist some idea of the interest he has in the prosecution of a Geological survey of the State. The descriptions of the mineral regions would, of course, be more minute in detail, and give the exact position of the veins of coal and iron. D. C.

JUNCTION RAILROAD—CAPACITY OF FERTILE LANDS TO SUSTAIN POPULATION—CINCINNATI, HAMILTON & DAYTON RAILROAD AND ITS CONNECTIONS.

BY DAVID CHRISTY, CINCINNATI.

A residence of near twenty years at Oxford afforded the writer ample opportunities of studying the geology of the route of the Junction Railroad, which extends from Hamilton, through Oxford, to Indianapolis. It seems most natural, therefore, for me to take up this railroad first, and, in connection with it, to notice the other branches and connections of that great *Trunk Road*, the Cincinnati, Hamilton & Dayton Railroad.

Before proceeding to details, it may be well to offer a remark or two on the connection between the geology of any given section of country and its agricultural capacity.

What more do you wish to know of a neighborhood, it may be asked, than that its lands are fertile, and capable of supporting a large population, and supplying abundant products for transport? To this question it need only be said, that productive lands do not always retain their fertility. Cultivated lands undergo a process of exhaustion, and become less productive, except care be taken to prevent such a result. This diminution of fertility may be due to one of three causes, or to all combined. Let me explain:

All soils have been derived from the decomposition of rocks.—Productive soils contain two classes of elements which enter into the combination of vegetation during the process of its growth. Chemists designate these elements by the terms *organic* and *inorganic*. The *organic* elements are derived from the atmosphere, and from decomposing animal and vegetable substances; the *inorganic* elements are all to be found in the *primary* rocks constituting the mineral substances of which they are composed. By the decomposition and disintegration of this class of rocks, these elements have

been transformed into *soils*, or have supplied the materials of the secondary rocks, from which, by decomposition, the greater portion of soils have been produced. These *inorganic* elements consist of potash, soda, lime, magnesia, manganese, iron, silica and alumina.—But while these elements are distributed with considerable regularity in the primary rocks, so as to supply to soils thence derived, in due proportion, all the elements essential to the growth of vegetation, yet such is not always the case in the secondary rocks, or in the soils derived from them. In the analysis of the *feldspars*, *micas* and *hornblendes*, associated with the *quartz* of the primary rocks, we find the *alkalies*, the *iron* and *alumina* always present; but in the secondary rocks such uniformity rarely ever prevails. For example: in the sandstones, often, there is too great an excess of *silica* to afford permanently productive soils; in the slates there is generally an excess of *alumina*, so as to supply little else than clay to their soils; but the limestones, in their decomposition, afford an abundance of *lime*, which, of all the *alkalies*, is the one most essential in giving the greatest fertility to lands.

The *organic* elements essential to vegetation are oxygen, hydrogen, nitrogen and carbon, and are constituents of or embraced in the atmosphere; sulphur and phosphorus are intermediate elements, also essential to vegetation, which are universally distributed in soils—the former mostly in abundance, the latter sparingly.

Now, the diminution in the fertility of lands, as we stated, may be due to one of three causes, or to all combined. One or more of the *inorganic* elements, in such a state as to be taken up by vegetation, being sparingly present in soils, may become exhausted by cultivation; or there may be a deficiency of the organic elements present in the soils, to promote the proper chemical changes in the inorganic elements, so as to adapt them to the absorbents of the growing vegetation; or there may be a sufficient supply of both of these classes of elements in soils, and a deficiency exist in the sulphur and phosphorus, when the results may be equally unfavorable to the maturing of crops.

With the statement of these facts, it will be readily understood, why the geologist, upon learning the true geology of any district, can give an opinion, proximately correct, as to its fertility; and you will understand, also, the importance of a knowledge of the geology of the country intersected by this railroad, to the distant friends of the enterprise. With soils containing the basis of an

inexhaustible fertility, and with the capacity of sustaining a population more than quadruple the present inhabitants, the distant stockholders will feel assured that the value of investments in this road must be enhanced, from year to year, by the annually increasing ratio of travel and of freights which will be secured to it, until the population reaches its maximum density.

The geology of the territory intersected by this railroad is not complicated. The rocks belong to the secondary class, and to the geological division, or formation, called Silurian. They are naturally divided into Upper Silurian and Lower Silurian, corresponding very nearly to the European formations bearing these names. The strata of which the lower division is composed are nearly horizontal at Cincinnati and Hamilton ; but from about the State line between Ohio and Indiana, they have a moderate *dip* to the west. These strata are composed of alternate beds or layers of limestone and marlite. The marlite is composed mainly of the silicate of alumina and lime, and resembles clays of various shades of grey and blue. The limestone is mostly of a blue color, and its strata, with those of the marlite, range in thickness from an inch or less to one, two and three feet—the marlite, however, mostly predominating. This arrangement has been very favorable to the intermingling of the elements of the strata while decomposing, and has given to the soils thus produced an abundance of carbonate of lime, constituting an inorganic basis of great fertility. This Lower Silurian occupies the distance between Cincinnati and a point six miles west of Connersville, Indiana, where, on ascending the main ridge west of the Whitewater river, the Upper Silurian rocks are presented.

These Upper Silurian rocks are also limestone of a buff gray color mostly, with but a small proportion of marlite between the strata, and are, generally, readily decomposed by atmospheric agencies.—This formation extends nearly to the termination of this road, but is mostly covered by the Diluvium described below. It has been called the *Cliff Limestone*, by Dr. LOCKE, on account of the precipitous cliffs which it forms along the streams of water that have cut their channels into its strata. Wherever the rocks of this formation have supplied the materials of soils, great fertility usually prevails.

Reposing irregularly upon both classes of the rocks already described, is an additional formation known as the *Drift*, or *Diluvium*. It is composed of boulders and pebbles of various sizes and classes

of rocks, intermingled with sands and clays. Its rocks are rounded by attrition, have been transported from distances, and include granite, syenite, gneiss, greenstone, trap and limestone. The limestone pebbles are usually greatly in excess over those of a primary character, so that the soils derived from the decomposition of this *Drift* are little, if anything, inferior to those of the underlying Silurian rocks. This formation lies in patches, sometimes of considerable extent, and has a depth varying from a few inches to more than a hundred feet. Over all this Diluvium, as well as over all the parts not covered by it, there exists a rich loam, the accumulation of ages and consisting of both organic and inorganic elements in such proportions, and of such depth, as to serve well the agriculturist for the production of the most bountiful crops; and then, beneath this loam there exists a basis of inorganic elements of inexhaustible extent, rendering the lands, by proper cultivation, of perpetual fertility.

The greater portion of the rocks of both these formations abound in putrefactions of marine *molluscs* and *polyps*. The organic elements thus retained in the rocks may be sufficient to be of much value to vegetation. Indeed, by a discovery made in the laboratory of Dr. LOCKE, a year or so before his death, by his son, Prof. JOHN LOCKE, JR., it would appear probable that there will be little need, so far as the phosphates are concerned, for the addition of guano to these soils. In testing the fossils, by chemical analysis, he discovered that they contained phosphoric acid, derived, of course, from the animal matter of the shellfish originally inhabiting the shells.

The seven counties through which this railroad passes include a total of 1,280,441 acres of land, of which 617,185 acres were under cultivation in 1850, thus leaving 663,256 acres, or more than one-half of the whole territory, then unimproved. The total population in 1850, including the city of Hamilton and all their towns, was 121,103 persons, or only one to each 10½ acres of land. The value of the products of agriculture and of animals for that year, in these seven counties, reached the sum of $8,125,482.

The population of these counties is about as dense as that of other counties equally distant from Cincinnati. The lands, too, are fully equal in fertility to those traversed by any other railroad extending from that city. They are rapidly filling up with an enterprising population, and greatly increasing their products. The completion of this railroad will give an additional impulse to their in-

dustry, and both travel and freights will augment in accumulating ratio.

I can not close this communication without referring to another point. The city of Connersville has a water power, derived from the Whitewater river and from the canal, which is scarcely inferior in extent to that of Hamilton. There are several manufactories already in operation at Connersville, and the completion of the Junction Railroad will impart a new impulse to manufacturing enterprise at that place, greatly to the profit of the road. Here, in closing this part of my article, allow me to add a remark or two:

The capacity of fertile lands to sustain population is not well understood in our country. From the evidence given in 1843 before the committee on allotments of land in the British Parliament, it appears that 112 bushels of wheat had been obtained from an acre of land dug with the spade; that the average profit derived from cottage allotments was at the rate of $100 an acre, and that one man, on the eighth of an acre of very indifferent land, had grown a crop worth $25. It is also in evidence that a Flemish farmer of six acres of moderate land, obtains from two acres and a half as much grain, potatoes, butter and milk as are required for the consumption of himself, his, wife, and three children, and sells the produce of the remaining three acres and a half. At one time the Roman allowed but seven acres for each citizen, upon which to support a whole family. At present the average size of landed estates in France is only twenty acres.

It may be well to extend our remarks to the other branches or connections of that great Main Trunk Road, the Cincinnati, Hamilton & Dayton Railroad, which is ramifying its branches indefinitely to the westward and northward, and forming connections eastward of the greatest importance to its business operations. There is but a shade of difference in the agricultural character of the lands through which all its connections pass, either northward or westward. The Drift, or Upper Silurian Limestone, almost everywhere, in these directions, occupies the surface, and affords a good basis for productive soils. The eastern connections pass into formations of a different character, of which we shall not speak at present.

LETTER FROM PROF. WOOD.

TALLAHASSE, Fla., April 25, 1857.

I HAVE visited the great Wakulla Spring, and seldom have I spent a more interesting day. It lies about fourteen miles southward of this city. The ride thither for the first three miles is over hills of red clay and through the deep, intervening valleys where either a lively stream of water courses its babbling way or a quiet lake is pent up in a basin. The latter feature distinguishes the region in this vicinity. Bodies of water of all dimensions, from square rods to leagues, nestle among the hills, evidently caused by subterranean streams washing the underlieing layer of clay. These hills and vales are of superior quality of soil, and, all around Tallahasse for miles, have been reduced to cultivation, and alternately flourish with crops of corn and cotton. The universal absence of green meadows is here, as throughout the South, noted by the eye of the northerner as a striking deficiency in scenery, more striking in Spring however, than in Summer. Here the forest consists mainly of oak with scattered pines (P. inops and variabilis). Leaving the hills, at length we again enter the vast "piny woods," or sand-plains, over which lie the remaining ten miles of our journey, with the long-leaved pine (P. palustris), the true turpentine plant, for our constant companion. During these ten miles we passed only three settlements, that is, three framed houses with the usual surroundings of slave cabins—the leading pursuit with all, appearing to be turpentine. The appearance of those dwellings however, although so far removed from neighbors, was neat and tidy, both within and without, and seemed the abode of intelligence and plenty. The monotony of the plain was here varied by an unusual feature; we passed many deep and broad depressions—basins—dry or with lakes often of large extent,—no streams; foreshadowing the cause of the gigantic spring which we were approaching. At length the last cabin is reached, and we are ready for dinner. Seeing a black wench at the door, my companion (President PEYTON, of the Florida College, to whose urbanity I am indebted not only for the pleasures of this day, but for *all* the attention shown me in Tallahasse,) addressed her, asking for refreshment.

"Massa and Misses not at home," was the reply.

"Well, Aunty, can 't you get us just a bite?"

"Nothin' fit for gentlemen in house."

"Well what are you getting for dinner?"

"Only 'nuff for black folks"—continued she, whom we perceived to be unwilling to take any responsibility in the absence of her owners. Forgetting our hunger, we were soon at the renowned spot. A smooth and clear sheet of water broke upon our sight (as we emerged from the tangled forest,) three-hundred or four-hundred feet broad, rounded in outline here, but stretching away *there*, a mighty river meandering through the forest. Of course a young alligator some three or four feet in length, first came under our inspection, but he was soon out of sight, among the reeds and rushes. We were soon aboard the little boat, and floating away into the midst of the lake And now the great wonder of this spring became apparent, viz. the absolute and perfect transparency of its waters.—Through this medium we could inspect the rapidly descending bottom and every object, large or small lying upon it. The white sand with its ripple marks, the shells, the bits of decaying wood, the fish—all were perfectly visible, one hundred feet below us!

"What is that which so much resembles a coffin?" said my companion. "It is the dark shadow of our course," said I, and to prove it I held out my hand, making a corresponding shadow with corresponding motions below. "And what are those bright points on the sand here and there?" asked I. "Picayunes which visitors have thrown over, to mark, by the time of their fall, the depth of the water," he replied. I tried the experiment, and for a minute or two beheld the little coin still flickering in its descent and finally resting with the others. Continuing our examination at intervals, when the waters were unruffled by the breeze, we at length discovered the chasm, the vast *barathrum* through which those pure waters arise. There it was, known by its blackness, by the side and beneath a shelving cliff of worn limestone rock of great extent. From beneath that cliff, an abyss of unfathomable extent, this river of crystal water arises,—a *natural* Artesian well.

Now the current bears our unresisting bark away, while we inspect the Pontedirias and Sagittaries, the nameless flags and rushes of the shore, or listen amused at the strange sounds—now resembling a coarse laugh, now the squealing of a pig, and anon a sort of barking groan, and then a splash, issuing from among them—strongly reminding us of the scaly monsters. At length we apply the

oars, after having floated far down the swift river, and are, at last, once more suspended over the abyss. And here we remarked, when the surface was a perfect calm, the apparent disappearance of the liquid element on which we were supported, leaving us in appearance suspended in mid-air between the heavens and the earth!

It has often been said, that these waters possess a magnifying power, causing minute objects upon the deep bottom to seem enlarged. This would be contrary to the known laws of optics, as the water can act only as a *plane* lens, as it in effect is. But I conclude that the transparency of this medium was such as to give a kind of phosphorescence to those objects on which the sun shone. Thus these bits of silver which lie upon the bottom appeared with no perceptable *disc*, but only as bright, shining points of no appreciable dimensions.

By actual and careful soundings, the deepest visible sands in these waters are one hundred feet below the surface.

The remarkable cold of this season has much retarded vegetation; nevertheless, on returning to my lodgings, I deciphered among my collection of plants in flower the following novelties, viz., Hymenopappus, Scabaeosus, Rosa Laevigata, Lupinus Villosus and Perennis Andromeda Mariana, A. Ferrugina and A. Vacemosa, Anona Pigmaea, Tetragonothica, Helianthoides, Leptopodaf Puberula, Asclepia Amplexicaulis, Verberbena Aubletea and V. Carolianiana, Sarracenia, Variolaris, an unknown Eupborbia a strange Scutellaria, etc., etc.

Yours etc., A. Wood.

OUR VIEWS AND REVIEWS.

The Chemistry of Agriculture, or the Earth and Atmosphere as related to Vegetable and Animal Life, with new and extensive tables. By David Christy, author of letters on Geology. Cincinnati: Rickey, Mallory and Webb, New York: C. M. Sexton.

This work contains the *essence* of all that has been written of any value upon the topics mentioned in its title. The agriculturist who would be intelligent in matters pertaining to his profession, will here find the information he needs briefly but clearly expressed.

In the analytical tables given at the end of the volume, he will see at a glance the result of years of labor in the laboratory, in determining the constituents of the various grains, grasses roots, soils, etc. We here give No. 3. of the seventeen tables both on account of its intrinsic value, and to show the design of the work

TABLE III.

Analyses of the Ashes, or Inorganic parts, of edible roots, Indian corn, etc., as obtained from the proportions stated below.

NAMES OF INORGANIC ELEMENTS.	POTATO. Roots.	POTATO. Tops.	TURNIP. Roots.	TURNIP. Tops.	CARROT. Roots.	PARSNIP. Roots.	RED BEET. Roots.	RED BEET. Tops.	INDIAN CORN. Grain.	INDIAN CORN. Stalks.	SUGAR CANE. Stalks.	BUCKWH'T. *b* Grain.	*a* HOPS. Hop.	*a* HOPS. Leaves	*a* HOPS. Vines.
Silica	0.84	49.4	3.38	12.8	1.37	1.62	0.85	2.25	2.09	26.97	44.17	1.95	21.50	12.14	6.07
Alumina	0.50	0.4	0.36	0.3	0.39	0.24	—	—	—	—	—	—	—	—	—
Potash	40.28	81.9	23.86	32.3	35.33	20.79	13.10	7.70	26.63	9.62	16.03	21.27	25.18	14.95	24.35
Soda	23.34	0.9	10.48	22.2	9.22	7.02	53.65	37.30	7.54	26.30	1.39	2.32	§§1.67	0.39	§§9.64
Lime	3.31	129.7	7.52	62.0	6.57	4.68	1.50	10.25	1.59	7.39	10.09	3.01	15.98	49.67	38.73
Magnesia	3.24	17.0	2.54	5.9	3.84	2.70	1.15	4.10	15.44	6.64	6.24	15.84	5.17	2.39	4.10
Oxyd of Manganese,	—	—	—	—	0.60	—	—	—	—	—	—	‡2.75	—	—	—
Oxyd of Iron	0.32	0.2	0.32	1.7	0.33	0.05	*1.15	*3.75	0.60	0.81	—	—	*7.45	*3.51	*0.40
Sulphuric acid	5.40	4.2	8.01	25.2	2.70	1.92	1.65	3.05	5.54	§1.19	5.79	1.55	5.41	5.04	3.44
Phosphoric acid	4.01	19.7	3.67	9.8	5.14	1.00	9.85	8.20	39.65	17.08	6.14	49.85	9.80	2.42	6.80
Chlorine	1.60	5.0	2.39	8.7	0.70	1.78	0.81	0.60	0.36	†3.42	†3.76	0.30	†7.24	†9.49	†6.47
Carbonic acid	—	—	—	—	—	—	16.27	21.90	—	—	4.66	trace	—	—	—
	82.83	308.4	63.03	180.9	66.19	41.80	99.98	99.40	99.44	99.42	98.27	98.84	99.40	100	100

* Phosphate of Iron. † Chloride of Sodium. ‡ Organic Acids. § Sulphate of Lime. §§ Chloride of Potassium.

a Patent Office Report, 1850–51. *b* Dr. SALISBURY.

NOTE.—The turnips, potatoes, carrots and parsnips, were weighed as taken from the field, and the Ash of 10,000 pounds analyzed, which gave the results above stated. The analyses of the red beet, Indian corn, sugar cane, buckwheat and hops, were made from 100 parts of the Ash of each. The cane is the average of four analyses, one of which, only yielded soda.

DECREPTITUDE OF THE PEAR-TREE.

BY J. DE JONGE, BRUSSELS.

EVERY individual being, whether of an animal or vegetable nature, has its average period of existence, during which it passes through all its stages, falls into decay, and, arrived at its limit, disappears from the face of the earth. As many years as a seedling Pear-tree requires to arrive at its full growth, so many years it takes to decay and die off. The age depends on the particular race, its degree of acclimation, the conditions, more or less favorable, under which the tree has been planted, and the care with which it has been subsequently managed.

Of all fruit-trees, the Pear, when sprung from a good race, attains the greatest age. This age varies from one hundred or one hundred and fifty up to three hundred years, or more. It is easy to ascertain its age by examining, when the tree has been sawed over by the ground, the annual layers which show the progress of its growth, its stoppage, and decline. These layers, very large near the center, become smaller and smaller towards the circumference, where they are almost imperceptible. It is in accidental situations that trees attaining the greatest age are found; but the soil must be rich, deep, and free from stagnant water. From these observations, the truth of which may be corroborated by every careful observer, it will be understood how necessary it is, in our cold and variable climate, when it is intended that the trees should attain a great age, only to plant stocks raised from seeds of hardy and vigorous sorts. In raising from seed, there are always some seedlings which have no similarity to their parents. For this reason, it is necessary to make a careful selection in the second year of their growth. All the seedlings which have a smooth bark, of an olive-green color, spotted with grey, and a stem that naturally grows straight and upright, may be considered to possess the characteristics indicative of firmness of growth and long duration.

The seedlings from the Wild Pear of the woods have been patronized; some authors have recommended the Sucree Verte Pear, which succeeds better in a strong soil than those of the Poire d'Amanda and Napoleon. In several experiments made within the last ten years, we have obtained fine stocks from these three varie-

ties, but have found that the most substantial have been derived from the Sucree Vertee. Nevertheless, we have observed that vigorous varieties from recent regenerations gave a better result. The stocks which were selected and planted were budded in the summer of the fourth year of their growth, not at six inches above the ground, but at three feet or more, for the following reason: Trees worked too near the ground are liable to sun-stroke, as formerly stated, while those budded at the hight of three feet are not. Those young trees raised for orchard culture, do not undergo any cut or wound which can not heal the same season. Their shoots are shortened back at the proper period, in order to form a fine pyramid, either with a half stem or tall stem; and, when older, the trees are subjected to a moderate thinning of the branches. Thus treated, they afford the prospect of good crops for many years. It will be understood, that the nearer we put off the period of weakness and decay, and the more we deviate from such system the sooner does that period arrive. Crops too heavy for the richness of the soil, too severe pruning, and inconsiderate lopping or thinning of the branches, and inattention to the destruction of insects, are so many causes which hasten the period of individual decay in the Pear-tree. The time, however, will come when attention to all these points is useless, when the tree loses its vigor, and only produces poor and flavorless fruit, containing no seeds. The terminal shoots are short, slender, their bark cracks, and they no longer perfect their wood, losing their leaves and becoming dried up.

When a tree presents these characteristics of old age, it ought to be destroyed, for it uselessly occupies room, has an unsightly appearance, and can only deposit diseased excretions by its roots, which it ought not to be allowed to do. No other tree ought to be planted in the same place till many years have elapsed, unless, indeed, the soil occupied by the decayed tree be removed.—*Gardeners' Chronicle.*

PEARS ON THE QUINCE.

At the last meeting of the London Pomological Society, Mr. Rivers, of Sawbridgeworth, exhibited three pyramidial Pear-trees, and with them the following memoranda. He said: "The trees (Louise Bonne of Jersey) are from seven to eight years old. No. 1, a tree budded on the Quince, has struck root from the collar of the graft; as soon as this took place, about three or four years ago, all the Quince roots died, for, as will be seen, the stump is quite bare. These (Pear) roots penetrated into the solid, calcareous clay to the depth of nearly five feet, and so hard was the clay that the spade could not penetrate it so as to take them out to their full length.—As soon as these roots struck into the clay, the tree ceased to bear, and its shoots become full of cankery spots, the leaves more green than those on the Quince roots, and the young shoots more vigorous, although they cankered and died back. Out of a plantation of two thousand pyramids of this variety on the Quince, only the tree now sent and another have struck root from the collar of the graft, and both are in the same state. Last year, every tree except these two was covered with the very finest fruit; the tree sent did not bear one—the other produced two or three, which were cracked, spotted, and worthless. No. 2 is a tree of the same sort, on the Quince stock, which grew within five feet of No. 1; this, in common with the others in the same plantation, has no canker, and has borne fine, clean fruit. The soil is moist, and brings on moss to a small extent. No. 3 is on the Quince, and is a young tree that has been twice removed. Trees of this kind, where soil is not favorable (and I have a part of my nursery the soil of which is very wet and cold), I remove biennially, giving them a compost of sand and rotten manure. In a few years, their roots become like those of rhododendrons, and keep close to the surface, so that the trees keep in good health, and bear profusely. The fibrosity of the roots of the tree sent is remarkable."

These specimens were extremely interesting, showing as they did that the Quince was better suited for certain kinds of soils than the Pear stock; they also showed how necessary it is to keep the roots of our fruit-trees near the surface, and indicated that, under certain circumstances, at least, to deep rooting we owe barrenness and canker.—*Ibid.*

CORRESPONDENCE OF THE CINCINNATUS.

BY A TRAVELING AGENT.

A MONTH'S, travel south of the Queen City, gave the writer a pretty fair introduction to the "garden" of the State of Kentucky, as the counties of Scott, Bourbon, Clark, Fayette, Jessamine, Woodford, and Boyle, laying in a body back from the Ohio, the distance of some sixty miles, may truly be termed.

THE BLUE GRASS REGION,

In which these counties lie, has the most productive lands in the State. The soil is underlayed with the blue semi-crystaline limestone; indeed, other counties of land surrounding the above—Harrison, Montgomery, Madison, Shelby, Franklin, Mercer and Mason; do not differ materially in geological formation, and practical results in a proper culture of the soil. The lime demarking this region may be said to pass from the Ohio, round the head of Licking and Kentucky rivers, Dick's river, and down great Green river to the Ohio. It covers an area of about one hundred square miles, and is one of the most fertile counties ever cultivated by man; its productions are usually luxuriant, and its tall grass hardly ever so nipt either by the browsing of cattle, or frosts of winter, but that from the salubrity of the climate there is always an ample supply of fodder for stock in the field. The woods, long since stripped of their undergrowth and celebrated cane-brakes, are beautifully open and covered with a thick, green carpet of grass, truly inviting to the taste of the lowing herd.

Kentuckians have the name of raising the most superior cattle in the country; well may they, for the facilities are abundant. Their best, most scientific and well-read farmers know how to appreciate them, and will be the means of causing this State to rank the highest, for horse and cattle raising. The railroads completed, and fast verging to completion, passing through this region, are rousing the hitherto Rip Van Winkle class to their superior advantages, and all are stimulated to excel in scientific agriculture. Too many are yet wrapped in self-conceit, and repudiate "book-farming," but all who have given it the least possible attention, have a taste for more, and acknowledge their ignorance of many things in their "line." It is a fact, that those who read the most, have the greatest desire to read and compare their experience in the various soils.

The best farmers in this prolific region are beginning to see that they have parceled out to themselves too much land, to be cultivated well, and were it not for "the fates," they say they would have it otherwise, but,—but, and so it is apt to end in but—their lands can not be purchased for less than one hundred dollars per acre, often more than that. The farmers there usually own from three hundred to twelve hundred acres; and it is by no means uncommon to see fields of from fifty to two hundred and fifty acres of plowed land, enclosed by one "string of fence," as is the expression. A man owning but one or two hundred acres of ground, is considered in very moderate circumstances. One farmer in Scott county owns three thousand acres in one body and can neither read, nor write; thirty years ago he was not worth a dollar, but is now a millionaire.

SCOTT COUNTY.

Speaking of Scott County, around Georgetown, its seat of justice, are some of the neatest, wealthiest and most learned farmers in the country. J. C. ROBINSON, Esq., Dr. GANO, Dr. CAMPBELL, Prof. FARNHAM, and others, in its immediate vicinity, have splendid farms, and though professional gentlemen, take great pleasure in displaying a refined taste in horticulture and agriculture. Here is located the somewhat celebrated Georgetown (Baptist) College, founded in 1840—an imposing structure, on a fine eminence, and having an able faculty of Professors, with about one hundred and fifty Students in the College.

The Female Seminary, a noble brick edifice one hundred by sixty feet, stands on a beautiful swell of ground adjacent, and is owned by Prof. FARNHAM, who is acting Principal. It has sixty boarding students—one hundred, including day scholars, and a graduating class of seventeen young ladies, between the ages of seventeen and twenty. The grounds fronting this Institution are laid out in fine taste.

PALATIAL RESIDENCES.

Magnificent private residences often present themselves to the traveler, as the homesteads of wealthy farmers, many of whom have not yet returned (in April) from their winter quarters in the south; and one is frequently lead to compare them with their surroundings of parks, outhouses, and dwellings for the negroes, etc.—fenced in, as they commonly are by substantial stone walls—with the feudal estates of old England. The style of their renowned hospitality, too, is princely. While thousands thus live in luxury and

ease, there are as many more who act as a great balance-wheel to the body politic, intent on plain republicanism and progressive enterprise.

Four miles south of Georgetown is the farm of Capt. N. CRAIG, a gentleman of strong passions and prejudices, but a man of superior common sense; he was for eleven years keeper of the State's Prison at Frankfort. His farm consists of near five-hundred acres of arable land; he pays a good deal of attention to pomology, graperies and the nursery business; seems to pride himself very much in his own experience, and from his marked success in graperies and manufacture of native wines, has this spring set out an extensive vineyard, intending soon, by the help of his German vine-dressers, to come completely in competition with Mr. LONGWORTH and other vine-growers in the vicinity of Cincinnati. The Captain has two artificial ponds, fed by living springs of water, in which are thousands of gold-fish sporting, for which he usually finds a ready market.

WOODBURN FARM.

In an adjoining county—Woodford—I made the acquaintance of R. AITCHESON ALEXANDER, Esq. This gentleman is the leading farmer, as he is the most opulent, in the State. Thinking it might be interesting to the readers of the CINCINNATUS, from the known urbanity of Mr. A. who took me into the various departments of his extensive domain, I took down the following statistical information in regard to what he is pleased to call *Woodburn Farm.* This is a general stock farm of two hundred and eighty acres, embracing agriculture, breeding cattle, horses and sheep. The cattle are of the short-horned Durham breed; also, Ayrshire and Guernsey breed, the cattle kept for dairy purposes. His dairy house is one of the neatest, coolest, and most desirable places imaginable—the cooling trenches, supplied with fresh running spring water, are laid in hydraulic lime. In the upper story, the proprietor expects to make a cool retreat for visitors, wherein to drink rich cool milk and eat cold collations.

Mr. A. has probably the finest breed of horses in the United States, and they may be classed as follows: Fifteen race horses, three of which belong to others who are having them trained here. Thirty-two blooded horses, mares and colts. One hundred and fifty work horses, mares and colts, and nine trotting horses. Included in this number are two fine stallions, imported. Besides these, there are thirty-nine mares and nine colts belonging to others, left there

for the purpose of breeding; making in all two hundred and six head of horses, fed on the farm.

There are four hundred and thirty-two head of cattle, of various kinds and ages. Of the full-blooded cattle, there are ninety-three cows, twelve bulls, (one Ayrshire and one Alderney,) thirty-four heifers, thirty-three bull calves and thirty-two heifer calves. These are all of the short-horned Durham breed, and many of them imported by Mr. A. Most of the balance of his cattle have a good portion of pure blood in their veins, and all as fine stock as I ever beheld in either England or America.

Of sheep, he has five hundred and forty-seven of the Cotswold and Southdown breeds, though there are some half-breeds, crossed with the common sheep of the country.

There are three hundred and sixty-eight head of hogs, mostly produced from the Hicklin and Clay breeds. They are very fine, grow to a good size and are easily kept.

The distinguishig feature, however, about this celebrated farm, consists in the systematic arrangement of every department. Mr. A., who is a very superior business man, superintends his entire establishment, save when absent any considerable time. His agent is Mr. S. W. Johnson. Each department has a head man—the horses, being divided into breed and training stock, have each separate managers. The cattle, also, divided into two herds, are managed similarly. The race and stallion stables are acknowledged as the best arranged of any in the U. S. At the first there are employed twenty-one negro men and boys, and a white boy, one white man, and a negro woman. At the latter, there are a white man, two negro men and two boys. At the cow-houses and sheds, which are also models, there are six white men, two white boys, and five negroes. There are also three men at the trotting-horse stables. Of men, women and children, white and black, employed on the various farms, in agriculture, etc., there are one hundred and twelve persons, which, added to the above named herdsmen, supported on the premises, make the sum total one hundred and six persons: Of this number there are twenty women and forty children.

To compute the wealth of this gentleman would be a difficult task, but the reader may have some idea of what it is, when I state what are the probable facts: namely, from his estate in Scotland, consisting of iron mines, he receives an annual income of $75,000 to $100,000 per year. His cattle are worth from $150,000 to $200,000;

horses, $50,000 ; sheep about $10,000, and his farms some $350,000. Besides, he is said to be a property-holder in Chicago, from $200,-000 to $300,000 : and he has invested over half a million dollars in Iron works on Green river, where he has employed quite a colony of Scotchmen, "imported" by him from the land of his ancestry. On the third instant his annual sale of fine stock takes place at the farm, after which—about the middle of the month probably—he takes his annual trip to Scotland. Although a bachelor of about thirty-five, he evidently takes much enjoyment, but intimated to me that after his arrangements and improvements should be completed, a better mansion built, a park and horticultural garden reared, he might have a cage prepared for his bird of paradise.

FRANKFORT, ETC.

The farmers generally in Woodford county are wealthy, and are turning more attention than ever to scientific farming. At the capitol, I made the acquaintance of the Auditor of State, T. S. PAGE, Esq., Rev. J. N. NORTON, and Prof. FALL, of the Female High School. The latter gentleman has a beautiful green-house on his premises, greatly admired by every one, and estimated the best in the State. These gentlemen take a decided interest in the promotion of science, connected with field operations. Frankfort itself appears like a dull, insipid town ; it has, however, one of the handsomest and most delightful spots, as a cemetery for the dead, to be found in the western country. It is situated on the highest grounds in the vicinity, and overlooks the Kentucky river, which is some two hundred feet below. The landscape scenery is enchantingly picturesque. There are many very fine monuments erected, one by the State in memory of the champions whose remains were brought from Palo Alto, and Beuna Vista—sons of Kentucky as they were—to rest with their fathers. Another fine piece of work memorizing RICHARD JOHNSON and the death of TECUMSEH, is here depicted on the stone. The citizens are about erecting another fine one to the memory of DANIEL BOONE. A rough enclosure, composed of rocks and a noble twin Elm tree, now mark the spot where this intrepid hunter and his wife lay side by side.

LEXINGTON.

This city, once the business emporium of the west, long since lost its charm ; but of late, since the completion of the Covington & Lexington Railroad, has seemed very much to revive. Farmers, too,

say the market is open to them now, and they are trebling their crops of wheat. This is the seat of the Transylvania University, the leading college of Kentucky, and other valuable schools. The Odd Fellows have just completed a splended building on the corner of Main street and Broadway. Ashland is but a mile and a half distant, but the "mill boy of the slashes" is not there. However, I saw preparations made in the excellent cemetery on the other side of the town for a monument soon to be erected to his memory. Next fourth of July will no doubt witness a large concourse of the old friends and admirers of HENRY CLAY, on laying the corner stone of that monument. M. C. JOHNSON, Esq., well known as a lawyer of high repute, has a beautiful situation in Lexington, and excercises much taste in horticulture; he is a subscriber to the CINCINNATUS.

PARIS.

This place has long been noted as an extensive cattle and horse market. People often come here from all parts of the State and from other States to trade in stock. But, as elsewhere, farmers in the country seem to turn more attention to raising grain, making it the leading staple of their commerce. Between Paris and Winchester I visited the beautiful

FARM OF BRUTUS CLAY.

It contains eighteen hundred acres; he has four hundred in corn and grains, and ten acres in sugar cane—sorgho suchre. He has between three and four hundred cattle, one hundred of which are short horned Durhams, and many very superior beef cattle. He has about forty horses, one an imported stallion; besides many choice jacks and jennets. This farm is certainly the most tasteful and neat of any I visited. The fences, lawns, his own splendid mansion, out-buildings, negro village, saw-mill and cow-houses, all bear marks of his own genius. His saw-mill and grist-mill are combined, and run by horse-power, keeping an immense horizontal wheel in motion. He has a cow-shed in course of completion one hundred and sixty-five feet by forty-six, two stories high, and with an abundance of room for eighty head of cattle; a railcar is to run the entire length of the building containing food to be dealt out to each.

Here I saw an Osage Orange hedge of three years growth in a fine state of cultivation; springs of water carefully walled in and the water courses straitened and turned to account. A pond, Mr.

CLAY informed me, on another portion of his farm, he had to wall in with cement at the bottom as well as sides, to prevent the water from running out. It seems that in digging, the workmen got into an immense sink-hole, and there is, no doubt, from their limited explorations, an extensive cavern in that vicinity. The entire Blue Grass country is more or less cavernous, and very many of the springs create considerable streams of water and often running through many acres of ground finally sink out of sight.

HENRY CLAY, Jr., R. H. MINDSEY, B. B. MARSH, and others, in the same vicinity, have beautiful farms. Mr. A. V. BEDFORD, one and a half miles from Paris, bestows personal attention to Pomology and horticulture. He has the May Duke grafted on the Wild Cherry, several Black Tartarians, slow growth, but stand the winter remarkably. Indeed, he thinks there is but little need of loss from cold, and the pear blight itself may be avoided by a little attention. The latter he considers caused by the hot sun on frozen vegetation, and to protect the trees, he places corn stalks to the depth of six inches around their bodies. I hope this gentleman will yet disclose more fully his experience in pomology to the readers of the CINCINNATUS.

CYNTHIANA.

This is the country-seat of Harrison county, formerly a part of old Bourbon, of which Paris is the seat. Hitherto greater attention has been paid to raising whisky than anything else; but the little time I spent there I became acquainted with Gen. L. DESHA, JOHN WILLIAMS, Esq., M. L. BROADWELL, H. ROWLAND, Dr. J. C. FRAZER and other leading agriculturists, who all became subscribers to our College Hill operations, and from their manifested zeal in the second annual meeting of their County Agricultural Society, which took place while I was there, it was evident a new day is dawning upon them. They will hold their first county fair probably the last of August, and are preparing grounds for it, as an annual place of resort, as neighboring counties have done.

I now came on to the last point I stopped at on the railroad, viz.

FALMOUTH.

Though only forty miles back of the Ohio, and the country seat of Pendleton county, this place contains but about five hundred inhabitants. The town and country have hitherto been very much behind many of their compeers, but are thoroughly waked up since

the completion of the railroad. Three meeting-houses, built of brick are nearing completion in Falmouth, a very good token, certainly, and other evidences are seen of prosperity and future growth. A. ROBBINS, Esq., one of the Directors of the C. & L. R. R. resides about half a mile from the Court House, has a fine farm of near two thousand acres, and his premises show marks of great refinement in the elements of farming, though he gave his lady the credit of the excellent taste manifested in the lawn fronting their mansion. Indeed, many of the Kentucky ladies have that credit, I find, and they will greatly appreciate the CINCINNATUS. It is thought that the soil of Pendleton will prove, by cultivation, very productive for wheat in the future, and farmers are turning attention to it. There is no fair held in this county, but from the interest awakened it will not be long ere they have them.

W. H. O.

(Continued from page 216.)

THE HONEY BEE.

SWARMING.

THIS phenomenon, though a common one, is not understood. It is generally attributed to the crowded condition of the hive; they are forced, say some, to colonize. If this were the true cause it would be more uniform, and not subject to so many exceptions as occur.

It is true, swarming does not take place often before the bees have become numerous, but there are so many exceptions, that we can not say that they are forced out for want of room, and some years when the bees are most numerous, there is no swarming at all. Some think that it is the new queen, desirous of seeking another dwelling, but this is quite futile, for instead of the young queen it is always the old one that leads out the first swarm. And should this same old queen be living the next year, she will also be found at the head of the first swarm which would leave the hive. Each subsequent colony on leaving, is led by a young queen. And it is a striking fact that an old queen never leaves a hive until she has deposited

eggs which will become future queens, nor until her principal laying of the eggs producing drones is over.

The workers construct the royal cell or cells. In a productive year they will often be found numerous, and as before stated, a number of young queens will be hatched, when a battle ensues, and all will be killed but one. The surplus queens are often killed in the egg and grub state.

One chief cause or accompaniment of swarming apparently consists in the agitation of the queen. She, by her peculiarly purturbed condition, arouses the bees nearest her. She darts back and forth over the combs, and seems to say, *get ready!* get ready! we must be off! They, faithful to her signal, and not stopping to parly as to the justice or reasonableness of the requisition, sally to the outlets of the hive, the queen escaping first. They seem perfectly crazed, and the hive, at the instant of the queen's egress, resembles the boiling over of a kettle, and the entire swarm is soon upon the wing, leaving the hive almost uninhabited. Commonly, they take but a short flight, and the queen alighting first, the bees cluster around her. They are then easily transferred to the home you would have them occupy, whether it be a glass palace, or hollow log; and they will soon tell you whether they are satisfied. The general and most reliable indications of swarming are, first, the appearance of drones; for no swarm will proceed from a hive where there are no drones. Secondly, when the bees begin to cluster upon the outside of the hive, and finally, when there seems under this state of the case, fewer bees than usual going abroad for collection, and returning without honey, or farina. A practical apiarian can tell with great precision when a swarm is about to emerge. And the swarming season is a time of untold interest and excitement to him. His pleasure at this time must be experienced—must be felt; to be appreciated. The cry, "the bees are swarming," puts him all on tiptoe, and the peculiar buzz, is exhilarating in the extreme. Bees on swarming seem to have no precise object in view, they will alight in the grass, or on the nearest tree, and often resort to situations the most unlikely and unsuitable for their convenience or preservation. If the queen should perchance alight upon your hat, the bees all settle down at once quietly around her.

After rising in the air it is commonly some tree that arrests their progress, and the queen will often alight at the unsheltered extremity of a branch, which, on leaving, they rise higher into the air, and

with great velocity seek a new home in some hollow tree top, not as some suppose, who seem actuated more by the love of the marvelous, than a statement of the truth, that they are endowed with a prescience, which induces them, before their departure, to seek out and prepare a place for their reception.

Bees swarm only in the best weather, and in the finest part of the day. And it is important to success, that the season for swarming should be fair, as we doubt not the Apiarian loses many a fine swarm by there not being fine weather when they are prepared to emerge. The young queen is hatched, and is often undoubtedly killed, by the time of emerging being protracted too long.

In hiving a swarm of bees, it is well to prepare first your hive, by rubbing it with some sweet kind of leaves, say apple-tree, hickory, or bee-balm, wet with salt water; this renders the hive sweet and pleasant. This being done, if they have alighted upon a branch after every preparation for the new colony has been made, either gently remove the branch, and then by a sudden jar shake them into the hive, putting the hive as speedily as possible in a proper position, and placing it favorable for the scattering bees to alight, or shake them directly from the branch, and then by repeated agitations keep them from re-alighting upon it. It is well to have a little water on hand, which may be thrown up into the air which will cause them to settle much more speedily. If they alight upon the ground, or upon a wall, or in the fork of a large tree, the effort must be, carefully to secure the queen in the hive, which is generally in the densest portions, with a very few others, which when done, all will soon, by a little agitation, repair to the hive. Many regard this operation as the most difficult in the management of bees, hence, many non-swarming swindles have been invented, but such think of nothing but sting and murder—and to some, they are really terrible, and persons of this description, should never attempt keeping bees. Often this difficulty is merely imaginary, and will vanish with a little experience, and the hiving of a swarm of bees will be attended with exquisite pleasure.

Bees will rarely sting when swarming, or on being hived, if carefully managed. It greatly excites their anger to meet the odor of a crushed bee. Care must be taken not to injure them in handling, if you would not be stung. Bees may be domesticated, and when managed carefully, no fears need be entertained of their stinging. It they emerge upon a sultry or showery day they are liable

to be cross, and sting badly, but in a pleasant clear atmosphere there is no danger. Some use screens of various kinds in hiving or working with bees, and it is well to have a bee dress in readiness to meet certain circumstances, such as just named; but ordinarily one will not use it when accustomed to bee management.

We shall next discuss the economy of bee-keeping in this country, also of feeding bees, Patent hives, etc.; our views of the bee moth how to prevent their ravages, etc. We shall be able to show many interesting phenomena, in the Apiary connected with the Agronomic department of our College.

THE MICROSCOPE.

(SEE ENGRAVING.)

FROM being a mere toy, the compound microscope has risen to the front rank amongi nstruments used by the Naturalist, in his investigations. It is indeed impossible to pursue scienti fic studies, to even a moderate extent, without its aid. Only a few years since, the simple microscope was much more reliable than the compound for any careful, accurate investigation. In the latter instrument, an enlarged image of the object is first formed, and then this image is magnified by a simple microscope, and it is evident that if we are to have distinct vision, the image must be formed with the utmost exactitude. Ordinary lenses have two serious defects which prevent them from forming such an image. One of these defects, is, that the outer portions refract the rays more than the central portions, and thus prevent their meeting in the same point; the other defect, is, that light, when refracted, is always split into seven colors, each of which travels its own road, and thus, again, their meeting in the same point is prevented; and unless all the rays falling on a lens from any one part of an object are accurately refracted to the same mathematical point, the image it forms will be distorted and imperfect. The errors described above can nearly all be corrected by making lenses, of two kinds of glass, crown and flint, which differ in their dispersive power, as it is termed. Each good object glass must

consist of six or seven lenses, fitted to each other, and if the curves of their surface vary the least from a certain calculated form, the lens is inferior or worthless. When the reader is informed that these lenses are sometimes so minute as to require a magnifier to see them well, he will appreciate the difficulty of grinding, polishing, and accurately centering six or seven such little pieces as constitute an object glass; nor will he wonder that from sixty to one hundred and twenty five dollars is demanded for an object glass alone.

The most valuable improvement in this instrument has been made within the last twenty-five years, and so perfect is a first class instrument now constructed, that *theory* can scarcely require greater perfection than *practice* furnishes.

As the optical part approaches perfection, the mechanical adjuncts and mountings must also keep pace with it or they will be valueless; hence all the adjustments and movements, require the utmost refinement of mechanical skill.

In using the higher powers, the tube carrying the glasses must be set precisely at a certain distance (as found on trial) from the object. And should it vary the one ten-thousandth of an inch from this distance, the view is destroyed. To bring the instrument readily to the proper place, two adjustments are furnished; the large milled head on the side of the tube as seen on the engraving moves a rack and pinion, furnishing what is called the coarse adjustment, by which the tube is rapidly moved to near the focus; it is then accurately adjusted by means of the milled head near the bottom of the tube; this is attached to a very fine screw, which moves a lever joined to the tube holding the object glass, so that the least possible variation of distance is hereby obtained. This is also used to measure the thickness of very minute objects; for instance, a hair, or fiber of wool is under examination; we adjust the focus to the upper side of the hair, which is readily ascertained by its distinct appearance when in focus, while the parts farthest from the glass appear dim and indistinct. We now turn the milled head of the fine adjustment until the farther side of the hair is in plain view. The distance the glass is moved, as registered by the graduated head, gives the true diameter of the hair.

The fact that objects of any thickness can not have all parts distinctly seen at the same time, is often a source of great disappointment to the observer who is not familiar with the laws of optics.—He supposes that anything he may thrust before the glass will be

visible as a whole, and may perhaps lay his finger upon the stage hoping to see it wonderfully enlarged, whereas with even a moderate power, a single minute, marking upon its surface, is more than sufficient to fill the whole field of view. An instrument to reduce the thickness of minute objects, and flatten all their parts down to the same plane, is a very necessary adjunct to a microscope; and is named the compressorium.

Many other adjuncts are required by the working microscopist; the illuminating apparatus especially is very important, and requires great skill in adjusting, and managing it with the higher powers.—Here is where the novice will encounter the greatest difficulty.—However excellent all the other parts may be, vision will be imperfect unless the right quantity and quality of light be furnished.—That it may be perfectly free from color, an *achromatic* condenser is employed, and that fine markings and minute shadings may be brought out. The light is sometimes polarized: at other times it is made to diverge from the object, as if it were self-luminous; sometimes it must reflect the light; at others transmit it; each class of objects requiring a different management in the illumination.

In order that the views given by the instrument may be drawn, a camera lucida is attached to the tube, by which the image is thrown down on paper, and can thus be readily traced with pen or pencil; Sometimes a photographic apparatus is employed, by which the magnified view is daguerreotyped in all its accuracy and beauty.

A mechanical stage upon which the object is placed to be viewed, is also a necessary adjunct. Suppose we are using a power of one thousand, and wish to move the object about that we may view all its parts; if we take hold of it with the hand, we may if very careful and steady move it as little as the one tenth of an inch; but this small motion would be magnified by the power employed, and it would consequently appear to move one hundred inches, or more than eight feet; passing out of view with the velocity of lightning. To remedy this, the stage itself is made moveable in every direction by means of racks and pinions, or a lever. In the engraving, two milled heads will be seen attached to the stage. By turning these, the observer can move the object slowly or rapidly, in any direction; he can even follow bodies in motion, such as swimming animalculæ, and keep them, despite their lively dancing, constantly in the field of view.

There are many other adjuncts such as reflecting prisms, mirrors,

pincers, needles, glass slides and cells, etc., etc., which we can not now describe. If any one should wish to pursue this subject farther, and obtain full instruction in regard to the structure and management of microscopes, let him read the excellent works of CARPENTER & QUEKETT.

There are two manufacturers of first class instruments in this country, viz. SPENCER, of Canastota, New York, and GRUNOW, of New Haven, Conn. In Europe there are three firms where the very best instruments can be obtained, viz. POWELL & LELANDS, SMITH & BECK, and ROSS—all of London. Until SPENCER commenced his labors, these three had no rivals in the world, and for general perfection of the instrument in all its parts and adjuncts, they have never been surpassed. The instrument we have chosen, is from the firm of Messrs SMITH & BECK, and we hope in future numbers to give an account of researches made with it among minute organisms.

"TESTIMONY OF THE ROCKS"—HUGH MILLER. *

"THE apotheosis of error is the greatest evil of all; and when folly is worshiped, it is as it were a plague spot on the understanding. Yet some of the *moderns* have indulged this folly with such consummate inconsiderateness that they have endeavored to build a system of natural philosophy on the *first chapter of Genesis*, the book of Job, and other parts of Scripture; seeking thus the dead among the living. And this folly is the more to be prevented and restrained because not only *fantastical philosophy, but also an heretical religion* spring from the absurd mixture of matters divine and human. It is therefore *most wise soberly to render unto Faith the things that are Faith's.*"

Some three hundred years have come and gone, since Lord BACON, in his "Novum Organum," proclaimed the foregoing as characteristic of the philosophy of those whom he designated as "moderns."—

* The Testimony of The Rocks; Or Geology in its Bearings on the Two Theologies, Natural and Revealed. By HUGH MILLER, author of "The Old Red Sandstone," Footprints of the Creator," etc., GOULD & LINCOLN, Boston; GEO. S. BLANCHARD, Cincinnati, 1857.

Nor has the scientific mind among *our* moderns any less cause of complaint against that "greatest evil of all"—"the apotheosis of error."

Against this deification of *philosophic* error, no one of his predecessors had ever presented an opposition so effectual as did Lord BACON in his vindication and establishment of the Inductive, and consequent overthrow of the Aristotelean system of dogmatic, philosophy; and against the similar tendency to the deification of *scientific* error, it seems to us that no one of *his* predecessors has ever aimed blows so sturdy and so stunning as those just dealt by HUGH MILLER, in his "Testimony of the Rocks."

The phases of religious skepticism have been as various as the changes in the predominant features of human society. When the world was yet burdened and bowed down by superstitions imposed by a domineering hierarchy, whose whole spiritual life was crushed, like the traitress TARPEIA, beneath the glittering gew-gaws of ceremony, which it had itself invoked, and when unbelief smacked of the spice of bravado, then *Atheism*, absolute and unmitigated, was the grim yet grinning phase that skepticism took. Anon, when by a succession of social cataclysms, the minds of men were roused from passive obedience, to reasoning upon the philosophy of society and the problems of government, then *Rationalism* was the modified aspect which skepticism assumed, and "Reason" was the *goddess* of its creed. And, still again, when the wand of science began to lift the vail that erring philosophy had drawn over the face of Nature—when her symmetry of form, and loveliness of feature began to be made manifest—then skepticism, bowing at her shrine—more prone and prostrate than PARSEE before the burning chariot of the Sun—offers up to nature an incense of adoration which he refuses to Nature's GOD! Exulting in the present and the visible, he scouts and spurns the ideal and eternal; rejecting Faith, he embraces Science; and denying revelation as the word of GOD, he glorifies Nature as GOD! And, in this wise, Atheism comes to be resolved into its latest and most fashionable phase, *Pantheism*. The scientific Pantheist, with a manner most reverent, courts familiarity with the archives of creation, and then, with a movement most adroit, arrays them against the records of Revelation:—With pretences most specious he explores the armory of Nature, and then, with ingenuity most subtile, turns the weapons wherewith she has armed him against the "thick bosses of JEHOVAH's buckler."

It is against this modern and most attractive, and therefore most mischievous, " apotheosis of error " that HUGH MILLER has arranged the well-knit and unimpeachable " Testimony of the Rocks."—To every intelligent and candid reader of this work, it will become manifest that, instead of having carelessly skimmed, the author has critically scanned the recondite records which nature invited him to peruse,—that, instead of merely glorifying the sublimity and eloquently lauding the loveliness of creation, with the microscope for his eye and geologic science for his scalpel, he has cut through the superficial integuments and dissected Earth's *skeleton* forms, and has revealed thereon the primal stamp of the Creator's seal.

But little more than one quarter of a century has passed since it became obvious to the world that the last and most severe attack that Infidelity could make upon the authenticity of Divine Revelation was to be contested upon the field of Physical Science. The weapons of logic, of moral testimony, of historic traditions, of verbal criticisms, of textual exegesis, had all been tried upon, and all turned pointless from, the divinely-tempered pages of Holy Writ. Foiled in the use of the metaphysical, Skepticism eagerly seized the panoply provided by discoveries in the physical; and, with much of vain and vaunting boast, Pantheism, cased in what he called " impervious mail " wrought by the hand of science in nature's armory, as the champion knight of this latest apotheosis of error, entered the lists and dared the defenders of Divine Revelation to the combat. Some, whose faith was the most implicit, were merely shocked at the presumption, and others were startled and staggered by the very boldness of the challenge. Several unwary champions of the Christian faith, miscalculating the force of this most courtly and accomplished knight, and trusting in the simple shepherd's sling of literal word and text—essaying " to build a system of natural philosophy, on the first chapter of Genesis "—were soon found worsted in the combat. The wide-echoing plaudits of atheistic crowds attracted the attention of the scientific world to these achievements of their most puissant champion. And now, to this doughty knight and mail-clad braggart, the humble quarrier, HUGH MILLER, with his " Testimony of the Rocks," has proven himself as " Ithuriel with his spear," in the use of which he has most amply shown that—

> " ——— no falsehood can endure
> Touch of celestial temper ; but returns
> Of force to its own likeness. ——— "

All the by-play of philological criticism which some have employ-

ed in both attack and defense of the Mosaic record, HUGH MILLER with characteristic force and earnestness disposes of at one blow,—a blow as well-timed as well-aimed,—as when speaking of "The Two Records, Mosaic and Geological," he says—"I would, in any such case, at once, and without hesitation, cut the philological knot, by determining that that philology *can not be sound which would commit the Scriptures to a science that can not be true!*"

Holding with CHALMERS that, while "the Mosaic writings do not fix the antiquity of the globe," he still claims that they do fix the antiquity of the human species. And how majestic is his expression of the growing forms and crowning perfections of creation!—"The *great column of being, with its base set in the sea*, and inscribed like some old triumphal pillar, with many a strange form,—*at once hieroglyphic and figure*,—bears, as the ornately sculptured capital that imparts beauty and finish to the whole, *reasoning, responsible* MAN!"

Seeking to establish, as he conclusively does, that the "days" mentioned in the Mosaic record were, like the "days" of the Geologic record, not natural days, but "great periods,"— not diurnal hours, but *eons* of ages;—and that the beginning of the human race was not at "the beginning" of creation, but was the beginning of a new era in creation, note with what eloquence he crushes the philosophy of the infidel geologists, who, contemplating the fossil cemeteries of the pre-Adamic dynasties of Earth, look upon the whole planet as but a "great city of the dead,"—and who, with annihilation in expectancy, regard creation as but "a universe of death:"

"The appearance of man upon the scene of being constitutes a new era in creation; the operations of a new *instinct* come into play,—that *instinct* which anticipates a life after the grave, and reposes in implicit faith upon a GOD alike just and good, who is the pledged "rewarder of all who diligently seek Him." And in looking along the long line of being,—ever rising in the scale from higher to yet higher manifestations, or abroad on the lower animals, whom instinct never deceives,—can we hold that man, immeasurably higher in his place, and infinitely higher in his hopes and aspirations, than all that ever went before him, should be, notwithstanding, the *one grand error* in creation,—the one *painful* worker, in the midst of present trouble, for a state into which he is never to enter,—the *befooled expectant* of a *happy future* which he *is never to see?* ASSUREDLY NO. He who keeps faith with all His humbler creatures,—who gives to even the bee and the dormouse the winter for which they prepare,—will to a certainty not break faith with man,—with man, alike the deputed lord of the present creation, and the chosen heir of all the future."—p. 139.

To the same purport, hear him again, as with fervid eloquence he points the progress of creation to be "Godwards," in his concluding paragraph on "The Two Records:"

"In the history of the earth which we inhabit, molluscs, fishes, reptiles, mammals, had each in succession their periods of vast duration; and then the human period began,—the period of a fellow worker with GOD, created in GOD'S own image. What is to be the next advance? Is there to be merely a repetition of the past?—an introduction a second time of man made in the image of GOD? No. The geologist, in those tables of stone which form his records, finds no example of dynasties once passed away again returning. There has been no repetition of the dynasty of the fish, of the reptile, of the mammal. The dynasty of the future is to have glorified man for its inhabitant; but it is to be the dynasty—"the *kingdom*"—not of glorified man made in the image of GOD, but of GOD himself in the form of man. In the doctrine of the two conjoined natures, human and Divine, and in the further doctrine that the terminal dynasty is to be peculiarly the dynasty of HIM in whom the natures are united, we find that required progression beyond which progress can not go. We find the point of elevation never to be exceeded meetly coincident with the final period never to terminated,—the infinite in hight harmoniously associated with the eternal in duration. Creation and the Creator meet at one point, and in one person. The long ascending line from dead matter to man has been a progress Godwards—not an asymptotical progress, but destined from the beginning to furnish a point of union; and occupying that point as true GOD and true man,—as Creator and created,—we recognize the adorable Monarch of all the future!"—p. 178.

In reading his fourth lecture, on "The Mosaic Vision of Creation," we can comprehend the origin of that strong expression of Dr. BUCKLAND, when, speaking of HUGH MILLER, he said,—"I would give my left hand to possess such powers of description as this man!" For, certainly, there is to be found all that is lofty in poetry united with all that is accurate in science,—all that is grand in description, combined with all that is vast in space and time. He presents this prophetic vision of the Past as it must itself have been presented to the mind of Moses who wrote this "record of appearances:"—indeed he assumes that, in writing Genesis, this "Prophet of the Past" is describing as from actual observation. Concerning this he says:

"It seems, then, at least eminently probable that such was the mode or form of the revelation in this case, and that he who saw by vision on the Mount the pattern of the Tabernacle and its sacred furniture, and in the Wilderness of Horeb the bush burning but not consumed,—types and symbols of the coming dispensation and

of its Divine Author,—saw also by vision the *pattern* of those successive pre-Adamic creations, animal and vegetable, through which our world was fitted up as a place of human habitation. The *reason* why the drama of creation has been *optically* described *seems* to be, that it was in reality *visionally* revealed.—p. 190.

And affirms that he is "greatly mistaken if we have not in the *six geologic periods* (noted by him) all the elements, without misplacement or exaggeration of the Mosaic drama of creation."

And with what grandeur of conception does our author close this glowing description of the inspired vision of Moses! He rejects the idea that the Sabbath of rest that followed the six "periods" of creation is to be regarded as a period of inactivity and indolence for the Godhead; but advances the sublime and soul-lifting thought that the "moral elevation and final redemption of man" is the appopriate work of Deity during that Sabbatic "period" in which the career of humanity is destined to run. He says:

"Again the night descends, for the fifth day has closed; and morning breaks on the sixth and last day of creation. Cattle and beasts of the fields graze on the plains; the thick-skinned rhinoceros wallows in the marshes; the squat hippopotamus rustles among the reeds, or plunges sullenly into the river; great herds of elephants seek their food amid the young herbage of the woods; while animals of fiercer nature,—the lion, the leopard, and the bear,—harbor in deep caves till the evening, or lie in wait for their prey amid tangled thickets, or beneath some broken bank. At length, as the day wanes and the shadows lengthen, Man, the responsible lord of creation, formed in GOD'S own image, is introduced upon the scene, and *the work of creation ceases forever* upon the Earth. The night falls once more upon the prospect, and there dawns yet another morrow,—*the morrow of* GOD'S *rest*,—the Divine Sabbath in which there is *no more creative labor*, and which, "blessed and sanctified' beyond all the days that had gone before, has as *its special object the moral elevation and final redemption of man.* And over *it* no evening is represented in the record as falling, *for its special work is not yet completed.*"—p. 210.

In the whole range of scientific writing we know of no conception so exalted as this.

HUGH MILLER was born at Cromarty, in 1805, and during his early life worked as a laborer in the Sandstone quarries, and afterward as a stone-mason in different parts of Scotland; and in this capacity he first began to study "The Testimony of the Rocks."—Though formed by nature and trained by habit to the endurance of great physical labor, yet the melancholy circumstances of his recent death assure us that the overtaxed mind yielded beneath the task which

its own activity imposed,—and HUGH MILLER, the learned and pious, by his own steady hand instigated by a delirious brain, perished, a victim to insanity.

"Unknown he came. He went a Mystery —
A mighty vessel foundered in the calm,
Her freight half given to the world. To die
He longed, nor feared to meet the Great "I AM."
Fret not. GOD'S mystery is solved to him.
He quarried Truth all rough-hewn from the earth,
And chiseled it into a perfect gem —
A rounded Absolute. Twain at a birth —
Science with a celestial halo crowned,
And Heavenly Truth — GOD'S Works by His Word illumed,
These twain he viewed in holiest concord bound.
Reason outsoared itself. His mind consumed
By its volcanic fire, and frantic driven,
He dreamed himself in hell and woke in heaven!"

Cincinnati, May, 1857. I. J. A.

CINCINNATI HORTICULTURAL SOCIETY.

(CONTINUED FROM PAGE 237.)

CINCINNATI, Saturday, April 25.

PRESIDENT in the chair.

The minutes being read, the President suggested a matter of error in the report of the Fruit Committee of last week, in calling the "Northern Spy" apple "*sweet;*" and the report, on consideration, was amended so as to read, "*sub-acid,*" instead of "*sweet.*"

After some communications from the Corresponding Secretary, the order of the day was called, on Mr. CARY'S resolution, as to holding the fall exhibition; and Mr. STOMS moved the suspension of the rules, to afford an opportunity for Mr. HEDGES to make an exhibition of sugar produced from the Chinese and African varieties of the Sugar-cane, with some explanations concerning the same.

Mr. HEDGES came forward and made some interesting remarks on this interesting subject

Time failing Mr. HEDGES to complete his remarks, on motion of Mr. FOOTE, the special order of the day was renewed, and Mr. HEDGES was invited to address the Society more at length at our next meeting.

The resolution of Mr. CARY was then discussed, when Mr. MILLET offered the following amendment:

Resolved, That this Society hold no fall exhibition during the time of holding the State Fair this fall.

Before taking the question on the amendment, Dr. STURM presented the following as a substitute for the original resolution:

Resolved, That we, as usual, hold our autumnal exhibition, at the same time contributing to our utmost capacity to the ornamentation of the Agricultural State Fair—our fair to commence on the eighth day of September, and to continue for two weeks.

Which substitute was adopted on division—thirty-seven in the affirmative, eight in the negative.

Messrs. CALDWELL, CARY and RILEY gave in their resignation as members of the Council, and, on motion, it was ordered that the matter of filling the vacancies in the Council be acted on at the next meeting.

Mr. SHÆFFER presented to the Library BICHLEY'S *Phisiological Botany*, for which the Society tendered thanks.

Dr. PETTICOLLAS exhibited a remarkable specimen of depredation by the "scale insect" on the yellow poplar.

HORTICULTURAL HALL, May 2nd, 1857.

Vice President STOMS in the Chair.

The Corresponding Secretary reported the receipt of three Packages of seeds from the U. S. Patent office,—Mr. BUCHANAN also reported packages of seeds received from the Patent Office by favor of Mr. RESOR.

On motion of Mr. HOWARTH, the resignations tendered by members of the Council were accepted—whereupon the Chair announced Five vacancies in the Council by resignation. And pursuant to the special order therefore adopted at the last meeting, the Society then proceeded to elect, by ballot, members of the Council to fill vacancies. And after ballot had, the Chair announced that Messrs. WARD CALDWELL, SAYERS, FOOTE, and ORANGE, were elected to fill the vacancies aforesaid.

Pursuant to the invitation extended to Mr. HEDGES requesting a continuation of his remarks on the Chinese and African Sugar-Cane, the chair invited Mr. HEDGES to resume his remarks, which he did; and proceeded to give much valuable information on this interesting subject, to the great satisfaction of *those who heard him.*

METEOROLOGICAL TABLE.

Observations made at Farmers' College, College Hill, Hamilton County, Ohio, Latitude 39° 19', *W. Lon.* 7° 24' 45" *for the month of April,* 1857, *by Prof. R. S. Bosworth. Hight of Station above the Sea,* 800 *feet.*

	Barometer, corrected for Temperature & Capillarity.				Open Air Thermometer.				Clouds—Course & Velocity.						Wind—Direction & Force.			Rain & Melted Snow.		
	7 A. M	2 P. M	9 P. M	Mean.	7A. M	2 P. M	9 P. M	Mean.	7 A. M.		2 P. M.		9 P. M.		7. A. M.	2 P. M.	9 P. M.	Hour Began.	Hour Ended.	Am't Inch.
1	28.826	28.900	29.170	28.965	40.5	46.0	28.0	38.2	10		10	N.W. 5	0	0	N. W. 4	N. W. 3	N. W. 4	3 P. M.	4 P. M.	
2	29.340	29.340	29.340	29.340	22.0	36.0	30.5	29.5	0	0	0	0	0	0	N. E. 2	N. E. 2	0			
3	29.360	29.176	29.154	29.230	33.0	56.0	43.5	44.2	0	0	4	Cirri.	2	Cirri.	S. E. 1	S. E. 1	0			
4	29.120	28.968	28.900	28.996	43.0	63.0	50.0	52.0	5	0	8	S. W. 8	10	S.W. 8	0	0		3 P. M.		
5	28.763	28.736	28.850	28.786	54.0	41.5	30.0	41.8	10	S. W. 6	10	N.W. 5	10		S. W. 2	S. W. 2			6 P. M.	1.020
6	28.990	28.965	29.070	28.998	19.5	27.0	19.0	21.8	4	NW. 10	10	NW. 10	4	N. W. 9	N. W. 5	N. W. 5				
7	29.123	29.050	28.970	29.048	24.5	44.0	42.0	36.8	0	0	5	Cirr. St	4	W. 8	S. 1	S. 1	S. E. 3			
8	29.022	29.122	29.194	29.114	50.0	41.5	37.0	42.8	5	S. W. 5	10	W. 6	10	W. 5	S. W. 3	S. W. 3	W. 1	10 A.M.	5 P. M.	0.345
9	29.192	29.152	29.142	29.162	33.0	42.0	34.0	36.3	5	W. 4	10	N. 3	5	0	N. 1	N. 1	0			
10	29.074	28.920	28.970	28.988	35.0	50.0	38.0	41.0	0	0	10	S.W. 1	10	0	0	0	0	3 P. M.	9 P. M.	
11	28.980	29.080	29.137	29.066	34.0	30.0	28.0	30.7	10	N.W. 8	10	N.W. 6	10	N.W. 5	N. W. 6	N. W. 6	N. W. 2		in night	0.355
12	29.097	29.060	29.067	29.075	26.0	46.0	35.0	35.6	0	0	4	W. 2	0	0	N. W. 3	W. 1	0			
13	29.000	28.922	28.992	28.971	34.0	50.5	35.5	40.0	5	0	8	S. W. 5	4		S. E. 1	S. 2	W. 5			
14	28.936	28.977	28.892	28.935	34.0	44.0	37.0	38.3	9	N.W. 3	4	W. 9	0	0	W. 2	W. 6	WSW. 1	in night		0.060
15	28.900	28.920	28.930	28.917	25.0	38.0	29.7	30.9	2	N.W. 3	10	W. 9	2	W. 2	W. 7	W. 7	W. 1			
16	28.840	28.830	28.934	28.868	29.0	41.5	25.5	32.0	3	W. 4	4	W. 5			W. 3	WNW. 6				
17	29.067	29.022	28.934	29.018	31.0	49.7	33.5	38.0	9	S. 1	10	0	10		0	S. W. 1	S. 1	6½ P. M.		
18	28.688	28.787	28.930	28.802	38.0	46.0	36.0	40.0	10	Nim.	10	W. 2	10	N. W.	0	W. 1	N. W. 1		8 A. M.	0.500
19	28.952	29.000	29.046	29.000	36.0	41.0	33.0	36.2	10	N.W. 2	10	W. 3	2		N. W. 1	N. W. 2	0	in night	11½A.M	0.180
20	29.104	29.029	28.964	29.032	34.7	52.0	45.0	44.0	0	0	2	W. 2	10		0	W. 1	0	in night		0.160
21	28.857	28.822	28.912	28.864	40.0	51.0	42.0	44.3	10	N. 1	5	N. 2	4	N.W. 1	N. 1	N. 1	N. W. 1			
22	28.990	29.020	29.014	29.008	33.5	48.0	42.0	41.2	10	N. W. 5	5	N. 2	5	W. 5	N. W. 3	N. W. 1	W. 3			

23	29.030	29.010	29.040	29.027	41.0	60.0	46.5	49.2	2	Cirri.	6	W. 1			N. W. 1	0	0			
24	29.117	29.120	29.106	29.114	41.0	59.5	46.0	48.8	0	0	0	0	0	0	N. W. 1	W. 2	0			
25	29.124	29.014	29.114	29.050	54.0	64.0	56.0	58.0	6	E. 1	3		10		0	S. E 1	0			
26	28.863	28.776	28.842	28.827	54.0	56.5	43.0	51.2	8	Haze.	10	S. W. 8	2	N.W.2	S. E. 1	S. W. 2	N. W. 1			
27	28.856	29.036	29.090	28.394	41.5	51.0	40.5	44.3	0	0	6	N.W.5	0	0	WNW. 5	WNW. 5	0			
28	28.973	29.160	29.166	29.100	43.5	60.0	44.0	49.2	0	0	10	S. W. 4	5	0	0	0	0			
29	29.218	29.156	29.150	29.175	46.0	63.0	53.0	54.0	0	0	0	0	2	Cirri.	0	N. E. 2	N. E. 1			
30	29.170	29.074	28.940	29.060	52.0	74.0	63.0	63.0	4	Cirri.	4	Haze.	9		E.S.E. 4	S. E. 4	0			
Sums.				870.530				1253.9												2.620
Means.				29.071				41.7												

REMARKS ON WEATHER.

2. Min. Thermometer 18.°5.
3. Circle around the moon.
4. Daffodils in bloom.
5. Ther. at M. 58°, wind changed from S. to W. at 1 P. M. Rained all day turning to snow at night.
6. Min. Ther. 16°. Snow squalls during day.
7. Lakelet in Botanic Garden frozen over last night.
10. Claytonia (spring beauty) in bloom.
12. Covered the lakelet over with ice, despite the wind.
13. Min. Ther. 32°, wind changed to west, with violence, at 4 P. M.
17. Snowed hard this evening, melted as it fell.
19. Snowing this morning, but soon melted.
21. Swallows appear.
22. A little snow this morn.
28. Anemone in bloom.
29. Chimney swallows.
30. Some peaches in bloom.

REMARKS.—A remarkably cold and backward April, averaging nearly one degree colder than the month of February.

EXPLANATION.—The state of the sky is indicated in this table by numbers from 0 to 10; 0 signifies perfectly clear sky, 10 that it is entirely covered with clouds, and intermediate numbers show the number of tenths clouded. The direction from which the wind blows is shown in the initials of the points of the compass. Its force is indicated by numbers; 0 meaning a perfect calm, and 10 the most violent hurricane.

MONTHLY EXTREMES.

	MAXIMA.				MINIMA.			
	7 A. M.	2 P. M.	9 P. M.	Month.	7 A. M.	2 P. M.	9 P. M.	Month.
Barometer, . . .	3d. 29.360	2d. 29.340	2d. 29.340	29.360	18th. 28.688	5th. 28.736	26th. 28.842	28.688
Thermometer . .	5th, 25th&26th 54.0	30th. 74.0	30th. 63.0	74.0	6th. 19.5	6th. 27.0	6th. 19.0	16.0

TO CORRESPONDENTS.

J. Spence. The flax seed chaff probably occasioned the death of the cattle by accumulating in the stomach, or some other part of the alimentary canal. We do not find either prussic acid or Strychnine in it, indeed it would be very strange if they were there. We have not examined for other poisons. No doubt had the cattle been opened soon after death its cause would have been found as above suggested. Was the chaff designedly fed to the cattle? We should think it contained about as much nutriment as a mixture of chips and sawdust.

J. L. M.—A good achromatic object glass of three inches clear aperture costs from forty to fifty dollars. A very passable one, however, may be purchased of McAllister & Brother, Chestnut St., Philadelphia for twenty-three dollars. Eye pieces, from two to five dollars. McAllister's priced catalogue is sent to all who apply.

L. A.—As the moon always presents the *same* side to the earth, it is evident that any one viewing it from a fixed point in space outside the moon's orbit, would, in the course of a lunar month, see every side in turn presented toward him. If this can be accounted for in any other way than by the moon making a revolution on its axis in the same time it makes one about the earth, we would thankfully receive the information. See Vol. 1st., page 331, of this Jounal.

R. E. S.—The Geologic formation of this region is termed the old or lower Silurian. Its fossils are shells, corals, and trilobites. Shells belong to that branch of the animal kingdom termed mollusca, corals to the articulata. Not a single vertebrate animal, not even a fish, has as far as we know, been found in it.

Chromolithography of Ehrgott & Forbriger.

NORMAN HOUSE AND PARK

Corner 4th & Main Sts, Cincinnati, O

THE CINCINNATUS.

VOL. II. JULY 1, 1857. NO. 7.

(Continued from page 272.)

THE HONEY BEE.

ECONOMY OF BEE KEEPING, ETC.

WITH this number we will close, for the present, our discussions in relation to the honey bee, with some practical remarks on the economy of bee keeping, patent hives, etc.

The inquiry is often made, can not bees be made profitable?—We answer unequivocally in the negative, in this locality. And for the simple reason, that the time for gathering honey is so short.—Under the most favorable circumstances, and during the best seasons it does not exceed six weeks, being from the first or middle of May to the middle or last of June. When the fruit blossoms, locust, white clover and poplar are gone the bee season is over. And if there is a failure of the fruit, and the season from July onward is dry, it will require all they store during those six weeks, to give them a fall and winter supply, and many will perish of starvation, unless fed during September; and bees during most seasons, will not hold their own, after the first of July, in Southern Ohio. Where the buckwheat is grown in abundance they will improve some upon it, but in this latitude, the buckwheat blossom is without much saccharine matter, on account of the heat during the season that it is in flower. In neighborhoods where the Linden tree flourishes, (commonly termed Basswood,) the season will thereby be lengthened some two weeks, and in such localities, with this additional supply, bee keeping will be far more successful and profitable. Judge FISHBACK, of Batavia, is the most successful and extensive bee keeper in southern Ohio, and it is chiefly owing to the fact of the abundance

of this tree in his locality; not that he does not unite superior skill, and long experience, to render his efforts the more eminently successful, which is also the case. The great desideratum to bee-keeping is bee pasture, ample and continued; give us this, and you may have your Patent hives, and bee palaces.

BEE FEEDING.

Will not bee feeding supply this defect? We reply that so far as making honey for the market is concerned, never.

Honey is a vegetable secretion—and not a secretion of the bee—which appears generally abundant upon blooming flowers, and is gathered by the bee through its proboscis, is swallowed, and on the return to the hive, is disgorged from the mouth into the cells. The portion collected by each is of course small, and yet the amount daily collected by a strong swarm in the midst of the working season is surprising. In an hours time, it is estimated that three thousand bees will go and return, in a swarm of eighteen thousand. And a small swarm of six thousand bees, have been known to construct four thousand cells in six days, and to fill many of them during the same period. We have known three large pieces of comb consisting of several thousand cells constructed during a single night, after a new swarm has been hived, and the queen had in the meantime performed her work of depositing eggs in many of them.

It is surprising what results they will accomplish in a brief space when all the circumstances favor their operations. We once had over one thousand pounds of honey stored by twenty eight young swarms in a period of five weeks. This was no common season.—Honey then being a vegetable product, and not a secretion of the bee, its properties depend entirely on the nature of the plants from which it is collected. One kind is of the finest flavor, delicious to the taste, pure and transparent; another is entirely of a different consistency, dark, greenish, tenacious or bitter; and a third has been known to produce deleterious effects, which were almost fatal to human life; and often even that which is apparently wholesome to some, is injurious to others. DIOSCORIDES, PLINY, and various ancient authors, speak of honey in the East being dangerous in certain years; and XENOPHON relates, that when the army of ten thousand, approached Trebisond, the soldiers having partaken copiously of honey found in the neighborhood, were afflicted like persons inebriated; several of whom became furious, and seemed as if in the agonies of death. Hence if man furnish the supply in

the form of sugar and water, you secure the same product in return with the water diminished it may be in quantity, which will sometimes be found crystallized in the combs, and then of course you have not syrup but sugar.

We once knew a bee-keeper who manufactured large quantities of what he was pleased to call honey, and sold it in the market for honey made from the offal and scrapings of sugar casks, gathered from the wholesale groceries, of the city, which—though after skimming and straining—must be a savory beverage to be retailed at twenty-five cents per pound as honey. Upon this subject as upon other parts of this business we are posted. We were met a few years since by a Yankee pedlar from Vermont, who had an extroardinary hive with which he promised by the feeding process to do wonders. It was denominated, ARZA GILMORE's Patent, and proposed when it should be properly constructed, to confederate numerous swarms into one grand republic: something like our States, united in one government. It was so arranged as that at any time you could strengthen the weak, and at all times make the strong *stronger*. By feeding such a community you could greatly increase the product of the bees, and manufacture just such an article as you wanted. It was regarded as a great secret, and was invaluable to the man that would purchase the same. The secret ran as follows, (for it is now out and full indemnity has been had for it.) Take one part Cuba honey, one part sugar, (white or brown, according to the quality of honey you would manufacture,) add two parts water making four proportionals, simmer them to gather; skim, and feed while tepid, and you will secure in return seventy-five per cent. good honey, a most delicious article equal to the nectar of flowers, especially if you feed loaf-sugar. The statement ran further, we have secured one thousand pounds of such honey, worth from twenty-five to thirty-five cents per pound from three hives in one season. Great discovery!

Names of Bank Presidents and Cabinet officers, stood conspicuous as vouchers, and cited as authority, appended to most flattering certificates signed and sealed by the *Printer;* for we saw no trace of their originals.

The result was as might be expected, the agent pocketed the money, and the gullible public paid the forfeit; and before all his arrangements for his community (not like, but something similar to ROBERT DALE OWENS *among men*) were completed, some two or three hundred dollars according to the taste and means of the pur-

chaser, would be absorbed. This is the last and greatest swindle in the bee business we have seen. The agent informed us, that he sold in one year in this single State of Ohio, seventy-five thousand rights. We make a discount of one half for its being something of a *Black Crow Story;* then, at five dollars a right, which was but half his price, it would amount to over one hundred and eighty thousand dollars—a profitable business still!

The last we heard of this agent, he was doing *a land office* business in the State of Michigan. He may with the tide westward have reached Iowa, or Wisconsin by this time. But further; this whole process of making honey was complete; if you wanted to make your honey fragrant and give it a fine aroma, add to your feed a little vanilla or rose, or strawbery essence to suit the taste. This is no fancy sketch, but a simple detail of what has been palmed off, as profitable, on the subject of bee-feeding. There is a valuable lesson connected with it all, to the skilful Apiarian. There is economy in feeding your bees in July, August, and September, on cheap feed, prepared as recommended by the hero alluded to. You thus prepare your weak swarms for winter, removing also your stored honey, you can supply its place to your strong swarms if needed with a less expensive article. They should be fed again a little in the spring while it is yet too cold for the bees to leave the hive. It greatly encourages and strengthens them. This feeding must be done with care in the fall; least you induce a spirit of plunder among the bees.

What of patent hives? Will not some of our patent hives greatly aid in making this business profitable? It will make it profitable to the mechanic. We have tried some sixteen different patents about with equal success, varying just in proportion to their departures from simplicity; the simplest being uniformly the best; and we now frankly say, we believe the old straw hive or hollow log is as good as any of them, with but a single exception. The glass in the rear of most of our patent hives enables us to discover more readily the condition of a hive. Perhaps more has been said and written upon patent bee hives of late years, than on any improvement in agriculture, and certainly to as little purpose. And after all that has been done in England, France and America, the bee is more successfully cultivated, and finer honey produced in Poland, by persons who never saw a book on the subject, or heard of a patent hive, or know the difference between a queen or drone, or the

offices they perform, than where all the experiments to the end of the chapter have been tried; the excellence of the honey, its quantity and quality, depending more on the season, and the quantity and quality of flowers which abound in the region, than in the form which the hive takes, or the artificial management bestowed.—As to the best form for hives, or the most approved kinds, what has already been said will subserve the purpose of a long story.

WHAT ABOUT THE MOTH?

In regard to the nature, instincts, and habits of this destructive little insect, and the preventing of its ravages a book might be written, and several have been written. But it will be our aim to shorten the story.

Patent hives instead of preventing, have generally accelerated their ravages, and proved to be miller palaces, furnishing good places for the deposit and development of their eggs. Such is the case with Rich, Reynolds, Arza Gilmore and others we might name. The old rough board box hive; full of cracks and cranies have resisted the ravages of the bee moth often longer than the most beautifully constructed patent hive standing along side.

OUR THEORY ABOUT THE BEE MOTH.

A hive of bees of ordinary strength, with the presence of a good healthy queen, will resist, of themselves, all encroachments from these depredators; while any quantity of bees, without such presence will fall an easy prey to their ravages. When a queen such as described is present, all is activity; every bee is on duty, guarding the entrance, destroying the eggs of this insect or performing some important office. We have placed a queen in a hive full of miller eggs and worms, and have seen it restored to health. We have seen hives full of bees, honey, and comb, become a perfect webb in one week without her presence.

The destruction of what was regarded as a fine hive, has been witnessed by every apiarian, while one less prosperous in appearance, standing beside it has successfully resisted all encroachments. Hence a hive of bees without a queen, or eggs in a state out of which to form one, is effectually dead. And like a dead carcass, about which the eagles or buzzards are gathered, will soon be removed by these cormorants (the moths) which nature has provided. Queenless hives are the ones attacked first by robbers, and no efforts will resist long their ingress. And when they are attacked, the be-

sieged soon join the besiegers and assist in removing the plunder.—After which, often a general belligerent and mobocartic state will be kept up.

Patent hives often lead to this very state of things in the following way. They are generally made of the same size and after the same pattern throughout, painted alike, set on a bench of the same hight, about the same distance apart. The young queens are often in this way misled. Alighting at the wrong place not knowing their own hive, are at once seized and destroyed. The loss of the hive is then inevitable. Many hives are doubtless ruined in this way. As we see the old queen leads the swarm, leaving the young queen generally in the cell, yet unhatched always unfertilized. She emerges on this errand and losing her way, is destroyed, and before another one can be reared, the hive is in ruins. Hence the old swarm is generally the one most in danger—the one destroyed. To guard against this catastrophe, the hives should be placed farther apart in the apiary, or painted in front with different colors, or set with their openings alternated. Indeed these fine hives, and fine apiaries, have generally proved unsuccessful; better set your hives promiscuously about the yard, than to be too tenacious about uniformity, setting them so closely together.

HOW PREVENT THE MILLER?

Let your effort be to discover the condition of your hive, and if you find it queenless, which you can easily discover by their movements, either restore one, or take the honey at once. The bees themselves must be their own protectors; you can do nothing to prevent such destruction; and after the laying season is principally over, if you would prove our theory, take away your queens, and one short week will convince you of its truth. There are miller eggs enough about any hive, at any time to destroy it in two weeks without a queen. You may assist them if you please; you will do it, whenever you see the egg, the miller, or the worm, but all will be in vain to prevent their ravages, if your hive is queenless.

WOULD YOU KEEP BEES?

If you love their society, and are willing to take part of your pay in witnessing their interesting and curious operations—if you love natural history and entomological science, by all means.—If like bruin you are captivated only by their sweets, or would enter upon the work to make money, it is by no means advisable. You

had better give fifty cents a pound for your honey, and as to money making, go west, and make; or break, as many are doing on a more magnificent scale. And yet I would advise every man who has five acres of ground, and who as before stated, is at all curious to keep a few swarms of bees, an observing hive or two; and some years he will derive a rich material product in delicious sweets, and by the material and immaterial products combined, be amply rewarded for his labors.—ED.

GEOLOGICAL REPORT IN RELATION TO THE SOILS OF KENTUCKY.

SOIL OF THE PRAIRIES COMPARED WITH THE BLUE GRASS LIMESTONE SOILS OF KENTUCKY.

IN our last number we made some extracts from Dr. OWENS' Report in relation to the soils of Kentucky, to which we added some practical observations of a general character, with the view to encourage the adoption of a system of cultivation that would improve rather than exhaust the soil, and promised in the present number to say something of the comparative fertility of the soil of the Western prairies with that of certain parts of Kentucky.

For the sake of comparison, D. ROBERT PETER, the assistant of Dr. OWEN in the chemical department of the Geological survey of Kentucky, made an analysis of an Illinois prairie soil, collected by him in October, 1855, opposite Keokuk, a few miles back from the Mississippi river, just from under the newly upturned original prairie sod. This soil, we presume, compares in its general character and constituents with that of a large portion of the West. The following is the result of the analysis, with the accompanying remarks of Dr. PETER, and the concluding admonition of Dr. OWEN:

Organic and volatile matter	9,050
Alumina	2,400
Oxide of iron	2,350
Carbonate of lime	,890
Magnesia	,526
Phosphoric acid	,175
Sulphuric acid, not estimated	
Potash	,197
Soda	,100
Sand and insoluble silicates	84,470
	100,163

In communicating the result of this analysis, Dr. PETER remarks with great justice:

"Notwithstanding the luxuriance of the growth of the first crops on the prairie soil, occasioned partly by the large amount of available nourishing matter afforded by the decay of the thick sod, it is evident from the above analysis, that, taking into consideration *durability* as well as *immediate fertility*, as ascertained by the chemical analysis of the soil itself, apart from the sod, there are many of our Kentucky soils which take the second rank, when compared with those of the *blue grass region*, which yet are fully equal to this prairie soil.

Compared with the first-rate soils of Kentucky, that of the prairies contains a much smaller proportion of alumina and oxide of iron, as well as lime, magnesia, phosphoric acid and alkalies. It contains a much larger proportion of fine sand and doubtless a larger proportion of the coarser sand than our best soils; and, therefore, while its large quantity of organic matters is held in the soil with a small force of attraction, because of the large proportion which the sand and silica bears to the alumina and oxide of iron; and hence they are readily soluble and immediately available in the production of luxuriant crops; these very circumstances will cause its more speedy exhaustion; and when the accumulated store of organic matter has been consumed by thriftless husbandry, soil can not rank beyond a second rate position.

By a comparison of the constituents of this Illinois prairie soil with the average soils of Kentucky, for example with (a) of the following table, which is an upland soil of Franklin county, waters of Benson, near Hardinsville, and (b) a sub-carboniferous soil of the Barren limestone formation, Barren county, we perceive that these Kentucky soils are, as a whole, in no ways inferior.

Organic and volatile matter	9,133	5,200
Alumina only in (b), alumina including oxide of iron and magnese (a)	3,1000	8,460
Oxide of iron		2'206
Carbonate of lime	,316	,366
Carbonate of magnesia in (a), magnesia alone in (b)	,517	,205
Brown oxide of manganese		,234
Phosphoric acid	,243	,159
Sulphuric acid	,068	
Potash	,173	,197

Soda - - - - - - - - - - - -	,049	,090
Sand and insoluble silicales - a - -	80.754	87,686
Loss in (a), loss and sulp acid in (b) - - - -	,647	,197
	100,000	100,000

The Franklin county soil is even rather richer in organic and volatile matter; both are richer in argillaceous matter, the Franklin county soil is considerably richer in phosphoric acid and the Barren county soil is almost equal to it and contains the same amount of alkalies.

If we compare the Illinois soil with the best Kentucky soils we find that there would require to be added to the Illinois soil, for each acre, to make it equal in the amount of fertilizer for only six inches in depth:

107,236	pounds	of ferruginous clay.
20,569	"	of limestone.
1,881	"	of phosphoric acid,
3,802	"	of unleached ashes.
392	"	of soda, or
836	"	of common salt.

It is true that the Illinois soil contains 1.28 per cent, organic matter, which would contribute to produce heavy crops for the first few years, but the above inorganic constituents are the true elements of permanent productiveness, and the Illinois soil, with 84.47 per cent. of sand and insoluble silicates, must of necessity be far sooner exhausted than the more retentive argilo-calcareous soil of the blue grass regions of central Kentucky.

The rich, black, fat, silicious prairie soils of the West are indeed wonderfully productive at first, for the reason above stated, but they never can have that permanent productiveness of the best argillo-calcareous soils of Kentucky, cultivated with any degree of judgment.

Let not, then, the Kentucky farmer without due consideration, leave the home of his nativity in the hopes of finding in the far West, land more productive than his own; let him rather seek to gain an insight into the qualites of his soil and adopt a frugal method of husbanding the strength of his new land and renovating the consumed ingredients of his old.

D. D. OWEN, *State Geologist.*

The comparison of these analyses should forever remove the er-

roneous opinion entertained by a large proportion of the cultivators of the Western prairies that the sources of the fertility of these lands are *inexhaustible.* From the general appearance of these different soils, even in the absence of the chemical analyses, it would seem to us that a close observer would come to the same general conclusions that the resources of Dr. PETER have disclosed.

The facts by these investigations should at once lead every farmer to adopt that system of *manuring*, cultivation and rotation of crops, that would tend to improve rather than exhaust his soil. They also present at a glance the materials of their relative proportions necessary to be applied in the same form for the restoration of those prairie lands, that under improper treatment have already become exhausted of much of their virgin fertility.

This survey and report, although made with special reference to Kentucky, may be made of immense practical value to Western farmers in general, and with this view, in our former number, we endeavoured to present the facts it suggests in the clearest possible light and hope our efforts have not been altogether in vain.—*Valley Farmer.*

Having been dissappointed in obtaining a fine chemical balance, which we had ordered, we have as yet been unable to pursue this interesting department of investigation to the extent we hope to do in a short time, when we shall give a careful analysis of our Ohio soils.

EXPERIMENTS ON OUR FARM.

OF the forty six kinds of wheat obtained from the patent office and elsewhere, we would report the White Perk, and the Prince Albert, which are so nearly alike, that you can scarcely discover the difference, are appearing the best. And these specimens are truly *royal* in their appearance.

The pellicle is remarkably thin upon the grain, almost transparent, and cream-like in appearance, large, round and plump. The white perk has been known to weigh seventy-two pounds to the bushel, and to yield forty-four pounds merchantable flour to the standard

weight bushel. These specimens are now looking beautiful. The White Flint, Genessee, Blue Stem, Mediterranean, Turkish Flint and some others appear quite promising. It is truly interesting to witness their development. We hope to be able to present a large number of excellent specimens at our State Fair this fall.—Ed.

LONGWORTH'S PROLIFIC STRAWBERRY.

Of all the strawberries recommended for general cultivation, we must unhesitatingly place this at the head. As its name imports, it is a truly prolific variety, yielding from twenty to twenty-five berries to a single truss, the prime ones surpassing in size any other variety cultivated among us.

Its chief excellencies consist in its being perfect in both organs, and therefore yielding a large crop in itself, and at the same time, being the very best fertilizer for any pistilate variety you see fit to introduce along side of it.

One of the chief objections, to the best purely staminate plants is, that by reason of their not bearing, they are more vigorous in growth, and sending forth more profusely their runners, though at first few in number, soon supplant the pistilates that you rely upon to bear fruit, and thus the novice in strawberry culture finds and asserts that his bed has all turned to males, or in common parlance *run out.*

Here you have in the prolific an excellent bearer, a fine market berry, fair in flavor, and with all, a superior fertilizer. The prolific will thrive upon the poorest clay soil, and bears well the summer's heat and the winter's cold. In its cultivation, stir the ground deeply, better trench as for grapes, then set in rows three feet each way and let them run. If you introduce pistilates you may set them in alternate rows, or to the extent of four-fifths pistilates if you desire. For so far as fertilization is concerned, one fifth the number of prolific is sufficient even for McAvoy's superior, the most difficult to fully impregnate of any pistilate that has come under my observation.

By all means secure this plant, if it should be at a cost of five dollars for a single specimen. If set in the spring it will give you in all probability fifty fine plants by fall then throw away as trash all merely staminate plants.—Ed.

STOCK RAISING.

Good farming depends in a great degree upon good stock, and this for many reasons. The experience of the best agriculturists of Europe and the older parts of this country proves that the vegetable products of the farm are dependent chiefly upon the animal products. The animal products are the chief support of the soil. Any soil will wear out by taking off every year its whole vegetable crop, and not supplying it with manure of any kind. There is yet discovered no way of enriching a soil equal to animal manure: and no way of keeping up the native strength of the soil except by keeping the farm well stocked. In Virginia and many of the States, there is much worn out land, now valueless. The reason is, because the land was never stocked. Its vegetable crop was every year taken off and no animals kept to repay the exhuasted soil. Where the animal crop is equal to the vegetable, under good cultivation, the farm will never wear out. The animal crop is the natural balance to the vegetable. One exhausts, the other enriches. If everything of a vegetable nature that a farm produces is put into stock kept on the farm and the manure well husbanded and applied, the soil will grow richer every year. Experience, as well as reason, shows, that vegetable products exhaust, while animal products enrich the soil.—A good original soil will bear and may be kept good on an equal animal and vegetable product. The practice of having stock farms and vegetable farms separate is evidently an unwise one. It is admissable only in new countries, where the regions distant from market can only be used for raising stock. The true plan in a settled country is to have every farm both a stock and vegetable farm. Small farms near large towns may be used wholly for vegetable purposes, provided manure from the towns be taken out to keep good this soil.

The value of stock upon a farm depends chiefly upon two things, viz: good care and good breeds. Good care consists of good feeding and watering, and good shelter from cold and rain. Good breeds are those which are healthiest, hardiest, breed best, and grow best on the least food.

We may illustrate the advantages of good stock by reference to the aggregate stock of France, England and the United States in comparison. The British Islands contain sixty-two millions of

acres and support thirty-five millions of sheep, a little more than one for every two acres. France contains one hundred and six millions of acres and supports the same number, about one for every three acres. Our country in 1850, had three hundred and ninety three million of acres in use, and twenty-six millions and two hundred thousand sheep, one for every fifteen acres. France has not improved her sheep for the last eighty years, save in the quality of the wool, by introducing the Merino from Spain. Wool has been her primary object. England has made meat, rather than wool, the primary object. She has made her sheep average in net weight of meat eighty pounds each, while the French sheep average only forty pounds each. England slaughters of her flock ten millions annually, giving her people eight hundred millions of pounds of meat.—France slaughters eight millions annually, and gives her people but three hundred and twenty millions pounds of meat. Estimating the meat to be of equal value, the return of a sheep farm in England is six times greater than one of the same area in France. The average weight of our sheep we have no means of ascertaining, but it must fall greatly below the English weight. But the comparison shows how much we are behind both England and France, in our sheep stock, and how much France is behind England, and the great advantage of good stock, being six times more valuable than inferior.

Of cows, France possesses four millions and England three millions. The French work many of their cows so as to spoil their milching qualities, and keep many of inferior kinds. England, from her three million cows, gets double the milk that France does from her four millions. In England there is a vast manufacturing and commercial population, so that her milk is worth four cents per quart, while in Farnce it is only worth two. The whole produce of the four million cows of France is $20,000,000, while that of the three million English cows is $80,000,000. Here again the profit of good stock over inferior is most apparent.

By a little further comparison of the agriculture of France and England we shall see the importance of the animal produce of a country, equaling at least its vegetable; and as a consequence, the importance of the animal produce of each farm equaling the vegetable.

The wheat crop of France does not average, compared with its whole number of acres, over two bushels per acre, while in England it averages four. The animal production of the English farm alone,

is more than the animal and vegetable both of the French farm.—Comparing the two agricultures as a whole, the English animal product is greater than its vegetable; while the French vegetable product is twice greater than its animal.

As a consequence, the English agriculture is rich and the French poor. And yet France has a soil every way equal to England, and a climate adapted to corn, tobacco, the grasses, and many crops that England can not well raise. It is evident that the high state of English agriculture is due chiefly to the superiority of its stock. If we examine the agriculture of all countries, we shall find that they are profitable and successful just about in proportion to the amount and character of their stock. It comes to this we think, that the value of the annual stock produce of a country, must at least equal the value of its vegetable produce, or its agriculture is not in a healthy state.

According to the census of 1850 our whole vegetable product, in round numbers, was $800,000,000; while the animal product was only $330,000,000; less than half of the vegetable. In New York, one of the older agricultural States, the value of the vegetable product is about twice that of the animal. The conclusion is that American agriculture makes a tremendous drain upon the soil, which is not compensated by animal manure. It is therefore exhaustive and destructive. Our farmers should weigh this subject well, and if they would not leave to their children exhausted farms and an exhaustive system of agriculture, they must bring the animal and vegetable products of their farms into proper relations. Let stock raising be at least equal in importance to vegetable.—*The Valley Farmer.*

Cotton is King; or the Culture of Cotton, and its relation to Agriculture, Manufactures, and Commerce; to the Free Colored People; and to those who hold that Slavery is Sinful in itself.—By DAVID CHRISTY. H. W. DERBY & Co., Cincinnati, 1856.

The revised Edition of this work is on our table. We would, were it in our power, lay it upon the table of every reading man in the nation. We have read it with intense interest, and propose to do so again, and place it among those works on the book shelf of

frequent reference in after time. Every proposition is so clearly stated and sustained by such a logical array of reliable facts, and the style so plain and manly; it is altogether a readable book.

Aside from its bearings on the all absorbing question of Slavery, it is a noble contribution to that department of our literature, that has to do with the subject of political Economy. It shows to the common mind, the connections, dependencies, and inter-dependencies of Agriculture, Cotton-culture, Manufactures, and Commerce throughout the civilized world. The agents and operators, in those different callings, are after all, but members of a great co-partnership; and if Cotton has gained the Supremacy, it must have been by the voluntary consent of the other members of the great firm.—So long as England, France, and the free States at home will consent to wear the Fabrics, drink the Coffee, eat the Rice, use the Sugar, and smoke the Tobacco, all the fruits of slave labor; and to the tune of over $120,000,000 per annum, some other method must be devised, than that of past memory, or we must consent to abide that predicted golden age, when *self-interest*, whether in cotton, or whisky, or wheat, or western lands, or eastern shoes, shall yield to the nobler principle of benevolence—when "holiness shall be inscribed upon the bells of the horses"—and it may be said, "the world converted."

This book, to be read with profit, should be read without prejudice—if necessary, we should lay aside, for the time, all our preconceived notions of the *only scheme* by which American Slavery can be abolished; though that *scheme* may have originated with ourselves. Indeed, if the staple of the work is based upon testimony that can not be impeached or set aside, it matters but little to us what the author's private opinions on the subject may be. After a heated controversy of more than one quarter of a century, in which neighborhoods have been embroiled, churches rent asunder, and the most bitter feelings of hostility engendered and fostered among those having a common political Brotherhood, it is time we should pause and review the ground already gone over—see where we once stood—where we now stand—and from the mount of second sober thought, take our bearings for the future. We presume to sit in judgment upon a past generation, and may not, *will* not posterity pass verdict upon the interest and follies of this, its illustrious predecessor—and will it not seem strange, that men of sense in this generation, should have a ground to strengthen their predi-

lections, and fan their passions to a burning heat, by popular speeches, political chicanery civil fictitious reading, more than by calmly searching for the truth. How much more rational it would be to see a people sitting down to read a work like the one on our table, storing the mind with valuable historical and statistical matter, than to see and hear them clamoring for a novel.

We ask our neighbors and friends to read this book for themselves, and judge for themselves of its merits, and not trust to the conflicting opinions of others. One says, the author endeavors to prove Slavery a "blessing." We find no such thing. Read, and judge. Another pronounces it a mere apology for Slavery. We have failed to find in it, a holocaust to any party. Without seeming to consult anybody, North or South, East or West, he moves straight forward to the showing of this one fact, "Cotton is King." Our author does not say whether King Cotton is a usurper, or came legitimately to the throne. He does not say, that his Kingdom is universal, or will be perpetual.

Whoever will read the work, will be convinced, that Cotton has reached such a prodigious growth, is so inwoven with the manufacturing and commercial interests of New England, and old England, should there be any considerable falling off in its production, it would be felt as a dire calamity throughout both hemispheres—in commerce crippled—manufactures stopped—thousands of the laboring classes turned loose to beg, or steal, or starve.

The origin and workings of those elements which have given to Slavery its commercial value, and consequent expansion, and the utter failure of the Free Colored labor to produce cotton at all equal to the demand, are set forth in strong light, and backed up by an amount of facts irresistible.

Exported to Great Britain, in 1791, only 138,316 pounds of Cotton. In 1800, 17,789,803 pounds; in 1810, 93,900,000 pounds; in 1820, 127,800,000 pounds; in 1830, 298,459,102 pounds; in 1840, 743,941,061 pounds; in 1855, 1,008,424,601 pounds.

These figures will show with what unprecedented vigor and acceleration the Institution has grown and expanded.

Now shall we read and ponder these things, and act accordingly, or shall we drive blindly on, dreaming we have conquered the enemy, when we have only nourished and fed him at our own tables?

We must say with the New York *Evangelist*, "We have not

space to sketch the arguments, but deliberately characterize it as a book of prodigious power, of very striking and perplexing facts, and strong logic."

ÆGERIA EXITIOSA,

OR PEACH-TREE WORM.

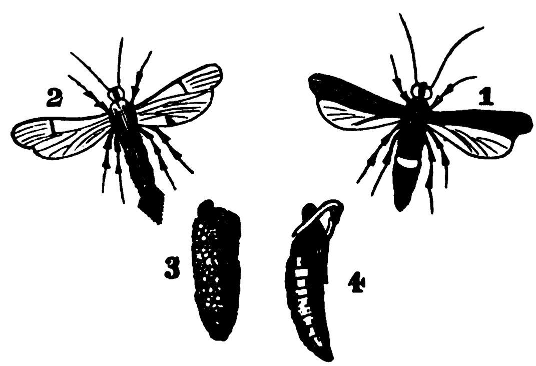


Fig. 1 Female in the winged state.
" 2 Male, " " " "
Fig. 3 Follicle of the Pupa state,
" 4 Exuvia or case of the Pupa.

AMONG the causes of the premature decay of the Peach-tree, the depredations of this insect, is the principal one.

In the LARVA or *grub-form*, the body of this worm is of a whitish color, and its head reddish brown. Its length, at maturity, is about three-fourths of an inch.

It commences its destructive career soon after it has hatched from the egg, and enters the tree, probably through the tender bark, under the surface of the soil. From thence, it first works downwards in the root, until the early part of the ensuing summer, when it directs its course upward, toward the body of the tree, by excavating a channel, as it progresses, between the bark and wood.

Having attained its full size in the *Larva* or *Grub*-form, it next passes into the *Pupa* state, between the first and the middle of July. At the same time, it may be discovered, close to the trunk of the

tree, enveloped in its *follicle*, and surrounded by a large accumulation of gum, that oozes out of its desiccated channel in the root.—In this, the *Pupa* state, it continues until the latter part of July, or the beginning of August, when it again changes into the *moth*, *winged*, or *perfect* state.

In this condition it is active and vigilant, concealing itself during the day, in cracks or crevices, about the trees, fences or other secure places, and at night issuing forth to fulfill its vocations, and prepare for propagating a new generation of the grub.

While in the *moth*-state, the sexes differ so much in appearance, that a superficial observer might mistake them for distinct species.

The female soon commences depositing her eggs upon the bark of the tree just above the surface of the ground, and completes the process before the close of September, when she, as well as the male dies.

It is said, that in some instances, she deposits not less than three hundred eggs upon one tree. The egg is oblong-oval, dull-yellow, and so small as to be only just observable by the naked eye. It hatches into a minute grub in eight or ten days. The young progeny then perforates the tender bark of the trees, beneath the surface of the earth, in the manner already suggested.

These several changes, constitute its annual routine of transformation, and they usually occur at the periods mentioned; yet there are individuals that do not conform to the general rule, but undergo the changes earlier or later, according to circumstances; and it is probable that there are a few females depositing their eggs during most, or all the summer months.

A detailed account of the habits, and scientific characters of the *Ægeria*, as well as of the means that are sometimes employed to prevent its depredations, is contained in Mr. SAY'S "American Entemology," vol. II., which your readers will do well to consult.*

* ÆGERIA EXITIOSA—Description. Male. Body, steel-blue: antennæ ciliated on the inner side, black, with a tinge of blue; palpi beneath, yellow: head with a band at the base, both above and beneath, pale yellow: eyes black-brown: thorax with two pale yellow longitudinal lines, and a transverse one behind, interrupted above, and a spot of the same color, beneath the origin of the wings: wings hyaline, nervures and margin steel-blue,—which is more dilated on the costal margin, and on the anastomosing band of the superior wings: feet steel-blue, the coxæ, two bands on the tibiæ including the spines, incisures of the posterior tarsi, and anterior tarsi behind, pale yellow: abdomen with two very narrow pale yellow bands, one of which is near the base, and the other on the middle: tail fringed, the fringe margined each side with white.

A knowledge of the habits of noxious or troublesome insects, will many times enable us to devise methods for their counteraction. In the instance of this insect, a very simple remedy to prevent its depredations has been suggested, and I am happy to say that experience has, to some extent, confirmed its efficacy.

The Ægeria in its perfect or winged state, is closely allied to the *moth* family. The fact is probably universally known, that aromatic Oils of all kinds are peculiarly offensive to that family of insects.—Every house-wife knows that a quantity of Camphor, Turpentine, Oil of Tansy, or Tobacco, placed in her drawers, containing woolen clothes, will effectually preserve them from attacks of the common moth.

It is evident that the same plan, under some form, may be employed to repel from the peach tree the *Ægeria*, in its moth state; and it is only in that state in which it deposits its eggs.

Tobacco, Sulphur Coal-ashes and Coal-tar have been tried with partial success—but they are temporary, and require to be often replaced.

Tansy and Wormwood contain large quantities of essential oil, which is peculiarly offensive to this insect; and it is found, that if the body of the peach tree be surrounded by half a dozen sprouts of either of these vegetables, it will secure it against the approaches of this destructive enemy.

They should be planted out in the spring, nearly in contact with the body of the tree, and so as to surround it. During the summer they should be cultivated, and kept free from grass. In this way they form a permanent and successful means of defense against the insect that has nearly exterminated the peach tree from many sections of the country.

It is probable the *Chanipodium anthelminticum*, the plant that furnishes the wormseed-oil, and perhaps some other bitter and aromatic vegetables, would answer equally well.

FEMALE. Body very dark steel-blue, with a tinge of purple: antennæ destitute of cilliæ: palpi beneath, black: thorax immaculate: superior wings steel-blue, without any hyaline spot: inferior wings hyaline, with an opeque margin and longitudinal line; the latter and the costal margin are dilated: tergum bright reddish—fulvous.

PUPA with two semifacciæ of spines upon each of the segments, excepting the three terminal ones, which have a single row only.

FOLLICLE brown, oblong-oval, composed of small pieces of bark and earth. closely connected together by the web of the animal.

It is probably unnecessary to add, that these means will act as a prevention against the insect, only while it is in the winged state.—They will not affect the larva or the pupa.

Nor will the Horticulturist expect them to preserve his peach trees against attacks of the yellows, the evil effects of a bad soil, or the injurious impressions of extreme cold weather while the wood is immature.—*From the Western Farmer and Gardener.*

J. P. KIRTLAND.

The most effectual remedy is the knife, with a strong application of soap suds afterward, or of coal-tar. This examination and extirpation to be successful must be had twice a year, in the fall and spring.

CONVENTION OF OHIO COLLEGE OFFICERS.

THE following Preamble, Resolutions, and Report of Committee thereon, were unanimously adopted, at a Convention of Ohio College officers, assembled at Columbus, Dec. 29., 1856.

WHEREAS, a sentiment very generally prevails in Colleges and Schools, that students ought, as far as possible, to withhold all information, respecting the misconduct of their fellow-students, from Faculty and Teachers:

And, whereas this sentiment is often embodied in what is called a "*Code of Honor*," by whose unwritten, and, therefore, uncertain provisions, students are often tempted or constrained, under fear of ridicule, or contempt, or violence, to connive at the offenses of their fellow-students beforehand, or to screen them from punishment afterwards:

And, whereas a bounty is thus offered for the commission of wrong, in the impunity which is secured to the wrong-doer; therefore,

Resolved, That a College or School is a community, which, as an essential condition of its prosperity, must, like any other community, be governed by wise and wholesome laws, faithfully administered.

And further resolved, That, as he is a good citizen, and, in the highest degree worthy of the gratitude of the community where he dwells, who, knowing that an offense is about to be committed, promptly interposes to prevent it; and, as he is a bad citizen, and worthy the condemnation of all good men, who knowing that an

offense has been committed, withholds testimony, or suborns witnesses to shield the culprit from the consequences of his crime ;—so in a College or in a School, he is a good student and a true friend of all other students, who, by any personal influence which he can exert, or by any information which he can impart, prevents the commission of offenses that are meditated, or helps to redress the wrongs already committed; and that he is a bad student, who, by withholding evidence, or by false and evasive testimony, protects offenders and thereby encourages the repetition of offenses; and further, that, as civil society can not attain those ends of peace and prosperity, for which it was constituted, if it should suffer accomplices in crime, or accessories, either before or after the fact, to remain or go at large among its members; so, no College or School can ever reach the noble purposes of its institution, should it permit confederates, or accessories in vice or crime, to remain enrolled among its members.

And, whereas one great object of penal discipline is the reformation of the offender therefore

Resolved, That, just in proportion as the students of any Institution will co-operate with its government in maintaining order and good morals, just in the same proportion should the government of such Institution become more lenient and parental, substituting private expostulation for public censure, and healing counsel for wounding punishments.

Unhappily, no person needs to be informed that a feeling of antagonism towards Teachers often exists among Students. The hostile relation of distrust and disobedience supplants the filial one of trust and obedience. Such a relation necessitates more or less of coercive discipline; and discipline, unless when administered in the highest spirit of wisdom and love, alienates rather than attaches.—Though it may subdue opposition, it fails to conciliate the affections.

A moment's consideration must convince the most simple-minded, that the idea of a natural hostility between teachers and pupils is not merely wrong, but ruinous. Without sympathy, without mutual affection, between instructors and instructed, many of the noblest purposes of education are wholly baffled and lost. No student can ever learn even the most abstract science from a teacher whom he dislikes as well as from one whom he loves. Affection is an element in which all the faculties of the mind, as well as all the virtues of the heart, flourish.

Springing from this deplorable sentiment of a natural antagonism between teachers and students an actual belligerent condition ensues between them. One party promulgates laws; the other disobeys them when it dares; or, what is an evil only one degree less in magnitude than actual disobedience, it renders but a formal or compulsory compliance;—there being, in strictness, no obedience but that of the heart. One party enjoins duties; the other evades, or grudgingly performs them. Prohibitions are clandestinely violated. A rivalry grows up between the skill and vigilance that would detect, and the skill and vigilance that would evade detection. Authority on the one side and fear on the other, usurp the place of love.—Aggression and counter-aggression, not friendship and co-operation, become the motives of conduct, and the college or the school is a house divided against itself.

We gladly acknowledge that there are practical limits, both on the side of Faculties and of Students, to these deplorable results.—Still, students do bear about a vast amount of suppressed and latent opposition against Faculties and Teachers, which, though never developing itself in overt acts of mutiny or indignity, yet mars the harmony and subtracts from the usefulness of all our educational institutions.

Though all students do not partake of this feeling of hostility toward teachers, or in the practice of disobedience to their requirements, yet, as a matter of fact, the wrong-doers have inspired the right-doers with something of their sentiments, and coerced them, as auxiliaries, into their service. A feeling almost universally prevails throughout the Colleges and Schools of our country, that the students, in each Institution, constitute of themselves a kind of corporation; and that corporation is bound to protect and defend, with the united force of the whole body, any individual member who may be in peril of discipline, although the peril may have been incurred by his own misconduct. If then, there is a corporation bound together by supposed collective interest, it is certain that this body will have its laws; and, as laws will be inefficacious without penalties, it will have its penalties also. These laws, by those who are proud to uphold and prompt to vindicate them, are called the "*Code of Honor*,"—a name which at once arouses the attention and attracts the sympathies of ardent and ingenuous youth. Being unwritten laws, with undefined penalties, both law and penalty will, at all times, be just what their framers and executors choose to make them. But un-

written laws and undefined penalties are of the very essence of despotism, and hence the sanctions for violating this Code of Honor, so called, are often terrible,—so unrelenting and inexorable that few, even of the most talented and virtuous members of our literary institutions, dare to confront and brave them. Often they are the very reverse of the old Roman decree of banishment; for that only deprived a citizen of fire and water, whereas these burn or drown him. They often render it impossible for any supposed offender to remain among the students whose vengence he has incurred.

The requisitions of this code are different in places, and at different times. Sometimes they are simply negative, demanding that a student shall take care to be absent when anything culpable is to be committed, or silent when called on as witness for its exposure. Sometimes they go further and demand evasion, misrepresentation, or even falsehood, in order to screen a fellow-student, or a fellow-conspirator, from the consequences of his misconduct. And sometimes, any one who exposes, not merely a violator of college regulations, but an offender against the laws of morality and religion, in order that he may be checked in his vicious and criminal career, is stigmatized as an "informer;" is pursued with the shafts of ridicule or the hisses of contempt, or even visited with some form of wild and savage vengeance.

It is impossible not to see that when such a sentiment becomes the "common law" of a literary institution, offenders will be freed from all salutary fear of detection and punishment. Where witnesses will not testify, or will testify falsely, of course the culprit escapes. This security from exposure becomes a premium on transgression.—Lawlessness runs riot when the preventive police of virtuous sentiment and of allegiance to order is blinded and muzzled. Thus, at the very outset, this Code of Honor inaugurates the reign of dishonor and shame. Judged, then, by its fruits, what condemnation of such a code can be too severe?

But, in the outset, we desire to allow to this feeling, as we usually find it, all that it can possibly claim under any semblance of justice or generosity. When, as doubtless it sometimes happens, one student reports the omissions or commissions of another to a College Faculty, from motives of private ill-will or malice; or, when one competitor in the race for college honors, convinced that he will be outstripped by his rival, unless he can fasten upon that rival some weight of suspicion or odium, and therefore seeks to disparage his

character instead of surpassing his scholarship; or, when any mere tattling is done for any mean purpose whatever;—in all such cases, every one must acknowledge that the conduct is reprehensible and the motive dishonoring. No student can gain any advantage with any honorable teacher by such a course. The existence of any such case supplies an occasion for admonition, which no faithful teacher will fail to improve. Here, as in all other cases, we stand upon the axiomatic truth, that the moral quality of an action is determined by the motive that prompts it.

But suppose, on the other hand, that the opportunities of the diligent for study are destroyed by the disorderly, or that public or private property is wantonly sacrificed or destroyed by the maliciously mischievous; suppose that indignities and insults are heaped upon officers, upon fellow-students, or upon neighboring citizens; suppose the laws of the land or the higher law of God is broken;—in these cases, and in cases kindred to these, may a diligent and exemplary student, after finding that he can not arrest the delinquent by his own friendly counsel or remonstrance, go to the Faculty, give them information respecting the case, and cause the offender to be brought to an account; or, if called before the Faculty as a witness, may he testify fully and frankly to all he knows? Or, in other words, when a young man, sent to college for the highest of all earthly purposes—that of preparing himself for usefulness and honor—is wasting time, health and character, in wanton mischief, in dissipation or in profligacy, is it dishonorable in a fellow-student to give information to the proper authorities, and thus set a new instrumentality in motion, with a fair chance of redeeming the offender from ruin? This is the question. Let us examine it.

As set forth in the Resolutions, a college is a community. Like other communities, it has its objects, which are among the noblest; it has its laws indispensable for accomplishing those objects, and these laws as usually framed, are salutary and impartial. The laws are for the benefit of the community to be governed by them; and without the laws and without a general observance of them, this community, like any other, would accomplish its ends imperfectly—perhaps come to ruin.

Now, in any civil community, what class of persons is it which arrays itself in opposition to wise and salutary laws? Of course, it never is the honest, the virtuous, the exemplary. They regard good laws as friends and protectors. But horse-thieves, countefeit-

ers, defrauders of the custom-house or post-office,—these, in their several departments, league together, and form conspiracies to commit crimes beforehand, and to protect each other from puuishment afterwards. But honest farmers, faithful mechanics, upright merchants, the high-toned professional man,—these have no occasion for plots and perjuries; for they have no offenses to hide and no punishment to fear. The first aspect of the case, then, shows the paternity of this false idea of "Honor" among students. It was borrowed from rogues and knaves and peculators and scoundrels generally, and not from men of honor, rectitude and purity. As it regards students, does not the analogy hold true to the letter?

When incendiaries, or burglars, or the meaner gangs of pickpockets are abroad, is not he, by whose vigilance and skill the perpetrators can be arrested and their depredations stopped, considered a public benefactor? And if he had been the victim of arson, housebreaking, or pocket-picking, what should we think of a witness who, on being summoned into court, should refuse to give the testimony that would convict the offender? Could we think anything better of such a dumb witness than that he was an accomplice, and sympathized with the villany? To meet such cases, all our courts are invested with power to deal with such contumacious witnesses in a summary manner. Refusing to testify, they are adjudged guilty of one of the grossest offenses a man can commit, and they are forthwith imprisoned, even without trial by jury. And no community could subsist for a month if everybody, at his own pleasure, could refuse to give evidence in court. It is equally certain that no college could subsist, as a place for the growth of morality, and not for its extirpation, if its students should act, or were allowed to act, on the principle of giving or withholding testimony at their own option. The same principle, therefore, which justifies courts in cutting off recusant witnesses, from society, would seem to justify a College Faculty in cutting off recusant students from a college.

Courts, also, are armed with power to punish perjury, and the law justly regards this offense as one of the greatest that can be committed. Following close after the offense of perjury in the courts, is the offense of prevarication or falsehood in shielding a fellow-student or accomplice from the consequences of his misconduct. For, as the moral growth keeps pace with the natural, there is infinite danger that the youth who tells falsehoods will grow into the man who commits perjuries.

So a student who means to conceal the offense of a fellow-student, or to divert investigation from the right track, though he may not tell an absolute lie, yet is *in a lying state of mind*, than which many a sudden, unpremeditated lie, stuck out by the force of a vehement temptation, is far less injurious to character. A lying state of mind in youth has its natural culmination in the falsehoods and perjuries of manhood.

When students enter college, they not only continue their civil relations, as men, to the officers of the college, but they come under new and special obligations to them. Teachers assume much of the parental relation toward students, and students much of the filial relation toward teachers. A student, then, is bound to assist and defend a teacher as a parent, and a teacher is bound to assist and defend a student as a child. The true relation between a College Faculty and College Students is that which existed between Nelson and his sailors; he did his uttermost for them and they did their uttermost for him.

Now, suppose a student should see an incendiary, with torch in hand, ready to set fire to the dwelling in which any one of us and family are lying in unconscious slumber, ought he not, as a man, to say nothing of his duty as a student, to give an alarm, that we may arouse and escape? Might we not put this question to anybody but the incendiary himself, and expect an affirmative answer? But if vices and crimes should become the regular programme, the practical order of excercises, in our colleges, as they would to a great extent do, if the vicious and profligate could secure impunity through the falsehoods or the voluntary dumbness of fellow-students; then, surely, all that is most valuable and precious in a college would be destroyed, in the most deplorable way; and who of us would not a hundred times rather have an incendiary set fire to his house, while he was asleep, than to bear the shame of the downfall of an Institution under his charge, through the misconduct of its attendants! And, in the eyes of all right-minded men, it is a far lighter offense to destroy a mere physical dwelling of wood or stone, than to destroy that moral fabric, which is implied by the very name of an Educational Institution.

The student who would inform me, if he saw a cut-purse purloining the money from my pocket, is bound by reasons still more cogent, to inform me, if he sees any culprit or felon destroying that capital, that stock in trade, which consists in the fair name or reputation of the College over which I preside.

And what is the true relation which the protecting student holds to the protected offender? Is it that of a real friend, or that of the worst enemy? An offender, tempted onward by the hope of impunity, is almost certain to repeat his offense. If repeated, it becomes habitual, and will be repeated not only with aggravation in character, but with rapidity of iteration; unless, indeed, it be abandoned for other offenses of a higher type. A college life filled with the meannesses of clandestine arts; first spotted, and then made black all over with omissions and commissions; spent in shameful escapes from duty, and in enterprises of positive wrong still more shameful, is not likely to culminate in a replenished, dignified, and honorable manhood. Look for such wayward students after twenty years, and you would not go to the high places of society to find them, but to the gaming-houses, or prison, or some place of infamous resort; or, if reformation has intervened, and an honorable life falsifies the auguries of a dishonorable youth, nowhere will you hear the voice of repentance and sorrow more sad, or more sincere, than from the lips of the moral wanderer himself. Now, let us ask, what kind of a friend is he to another, who, when he sees him just entering on the high road to destruction, instead of summoning natural or official guardians to save him, refuses to give the alarm, and thus clears away all the obstacles, and supplies all the facilities, for his speedy passage to ruin!

If one student sees another just stepping into deceitful waters, where he will probably be drowned; or, proceeding along a pathway, which, has a pit-fall in its track, or a precipice at its end, is it not the impulse of friendship to shout his danger in his ear? Or, if I am nearer than he, or can for any reason more probably rescue the imperiled from his danger, ought he not to shout to me? But a student just entering the outer verge of the whirlpool of temptation, whose narrowing circle and accelerating current will soon engulf him in the vortex of sin, is in direr peril than any danger of drowning, of pit-fall, or of precipice; because the spiritual life is more precious than the bodily. It is a small thing to die, but a great one to be depraved. If a student will allow me to co-operate with him, to save a fellow-student from death, why not from calamities which are worse than death? He who saves one's character is a greater benefactor than he who saves his life. Who, then, is the true friend; he who supplies the immunity which a bad student *desires*, or the saving warning, or coercion, which he *needs*?

But young men are afraid of being ridiculed, if they openly espouse the side of progress, and of good order as one of the essentials to progress. But which is the greater evil, the ridicule of the wicked, or the condemnation of the wise?

> "Ask you why WARTON broke through ev'ry rule?
> 'Twas all for fear that knaves would call him fool."

But the student says, Suppose I had been the wrong-doer, and my character and fortunes were in the hands of a fellow-student, I should not like to have him make report, or give evidence against me, *and I must do as I would be done by.* How short-sighted and one-sided is this view! Suppose you had been made, or were about to be made, the innocent victim of wrong-doing, would you not then wish to have the past injustice redressed, or the future injustice averted? Toward whom, then, should your Golden Rule be practiced,—toward the offender, or toward the party offended?—Where a wrong is done, everybody is injured,—the immediate object of the wrong, directly—everybody else, indirectly;—for every wrong invades the rights and the sense of safety which every individual community, or body politic, has a right to enjoy. Therefore, doing as we would be done by to the offender, in such a case, is doing as we would *not* be done by to everybody else. Nay, if we look beyond the present deed, and the present hour, the kindest office we can perform for the offender himself is to expose, and thereby arrest him. With such arrest, there is great chance that he will be saved; without it, there is little.

Does any one still insist upon certain supposed evils incident to the practice, should students give information of each other's misconduct? We reply, that the practice itself would save nine-tenths of the occasions for informing, and thus the evils alleged to belong to the practice would be almost wholly prevented by it. And how much better is antidote than remedy.

But again; look at the parties that constitute a College. A Faculty is selected from the community at large, for their supposed competency for teaching and training youth. Youth are committed to their care, to be taught and trained. The two parties are now together, face to face; the one ready and anxious to impart and to mold; the other in a receptive and growing condition. A case of offense, a case of moral delinquency,—no matter what,—occurs. It is the very point, the very juncture, where the wisdom, the experience, the parental regard of the one should be brought, with all its

healing influences, to bear upon the indiscretion, the rashness, or the wautonness of the other. The parties were brought into proximity for this identical purpose. Here is the *casus fœderis.* Why does not one of them supply the affectionate counsel, the preventive admonition, the heart-emanating and heart-penetrating reproof; perhaps even the salutary fear, which the other so much needs ;—needs now, needs to-day, needs at this very moment;—needs as much as the fainting man needs a cordial, or a suffocating man air, or a drowning man a life-preserver? Why is not the anodyne, or the restorative, or the support, given? Shillful physician and desperate patient are close together. Why, then, at this most critical juncture, does not the living rescue the dying? Because a "*friend*," a pretended "FRIEND," holds it as a Point of Honor that, when *his* friend is sick,—sick with a soul-disease, now curable, but in danger of soon becoming incurable,—he ought to cover up his malady, and keep the ethical healer blind and far away! When Cain said, "Am I my brother's keeper?" it was a confession of his own crime. But even that crime, great as it was, fell short of encouraging Abel to do wrong, and then protecting the criminal that he might repeat his crime.

> "Where we disavow
> Being keeper to our brother, we're his Cain."

Such is the whole philosophy of that miserable and wicked doctrine, that it is a *point of honor* not to "report,"—though from the most humane and Christian motives,—the misconduct of a fellow-student to the Faculty that has legitimate jurisdiction over the case and is bound by every obligation of affection, of honor, and of religion, to excercise that jurisdiction, with a single eye to the good of the offender and of the community over which it presides. It is a foul doctrine. It is a doctrine which every parent ought to denounce wherever he hears it advanced,—at his table, at his fire-side, or in public. It is a doctrine which every community of students ought, for their own peace, safety and moral progress, to abolish. It is a doctrine which every College Faculty ought to banish from its halls;—first by extracting it from its possessor, and expelling it alone; or if that severance be impossible, by expelling the possessor with it.

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In conclusion, the Committee would express a confident opinion that the proposed revolution in public sentiment is entirely practi-

cable. The evil to be abolished is an enormous one. The reform would be not only relatively but positively beneficent. The precedent already established, if it does not enforce conviction, at least affords encouragement. The Committee, therefore, recommend the doctrine set forth in the above Resolutions, to the Faculties of all Colleges,—especially to those in the State of Ohio, whom they more particularly represent,—for practical and immediate application.

On behalf of the Committee,

HORACE MANN.

CORRESPONDENCE OF THE CINCINNATUS.

BY A TRAVELING AGENT.

MISSING the mailboat a short time since, I took flight on the "Swallow," for Louisville, which city I reached ere the "rains set in," "April showers" being this season measurably transferred into May and prolonged to half of June; but despite the croaking of many, nevertheless, producing abundance of fruit and promising an abundant harvest. Speaking of this, with what remarkable rapidity Nature, this season, so long enchained in ice, finally, with a short spring, hastened its way into summer, burdened with fruit—the sure return of "seed time and harvest" verified by both Nature and Providence.

The scenery of La Belle Rivere passed, and the Fultonian rockings of a night in a cupboard experienced, and we "land" on paving stones, anon shut in by brick walls and the city's busy din. In such a case, one sees but little of "life in the country." The liberality of the founders of Lousville, however, is greatly manifest, in the breadth of the streets, profuse and rich foliage, together with the generally ample space that is found around dwellings. After all, there is much of the country in such a city—its air, burdened with the fragrance of its flowers its shrubbery, and the ample shade of forest trees.

On Saturday, the 6th of June, the first display of the Horticultural Society took place here. The backwardness of the season caused a meager display in variety. But on the succeeding Satur-

day I think they fully coped with our Cincinnati Society, both for fruits and flowers. The attendance upon the exhibition was large, of both ladies and gentlemen. Indeed, it seemed that the former assayed to eclipse Flora herself as to fragrance and beauty, so full-blown, wide spread, gaudy and perfumed were they all. Many of them might charitably be adjudged green-house plants, exotics, touch-me-nots, certainly not farmers' daughters. I looked to find the lilly, modest flower; but alas! if there at all, 'twas trodden down, suppressed, certainly not seen.

It will be borne in mind that Louisville is the seat of the next, and fifth annual exhibition of the United States Agricultural Society, to take place on the 1st, 2d, 3d, 4th and 5th days of September. There will be, no doubt, a very large number of really scientific farmers in attendance from every portion of the country. All expecting to be present should avail themselves of every information in their power—the published arrangements and Premium List, especially, and if they intend to enter live stock or contribute in any way to the exhibition, forward such notice, at furtherest by August 23d, to the Assistant Secretary, Col. L. A. Whitely, of Lousville, that arrangements may be made for their accommodation.

On the wing, Yours, W. H. O.

NORMAN HOUSE AND PARK.

(SEE ENGRAVING.)

A PAMPHLET with the above title has been recently published, and has been favorably received by the press and the people. In stating the plan and prospects of the Norman Company, many suggestions are made interesting to the general reader and to men of business. The frontispiece, the same as the one in this number of the CINCINNATUS, represents faithfully the intended House and Park, which are to be a little more than half a mile south west of our College, and about a mile north west of Cumminsville.

The proposed Park is to contain eighty acres—to be purchased and improved by a company—to have a Vegetable garden, Chicken-

yard, Orchard, Vineyard, Dairy, Fish-pond, Baths, Observatory, Promenades, etc. The House—160 feet front by 180 deep, to be of stone and of Norman style. Stock $25 per share, and the whole cost of the land and all the improvements including the House $150,000. In addition to its other attractions, this Park is recommended by its beautiful scenery, and most salubrious atmosphere.

The plan of the Norman Company is that no payment shall be required, until Twenty-four thousand dollars shall have been subscribed; the money first collected is to be applied to paying for the lands securing to the company a perfect unincumbered title; the next, to making such improvements as are certain to be profitable, as putting out fruit trees, grape vines, etc,—and whatever is done, is to be upon the cash system. As no debt is to be contracted beyond the means of the company immediately available at the time of making the contract, sacrifices of property will be avoided; and as the land is to be purchased at its present cash value, no loss can be reasonably apprehended.

Persons who wish to make investments, or who wish to reside in the country, but near the city, during the summer, are particularly interested in this enterprise. For the pamphlet, and for full information, inquire of J. T. Crapsey, N. W. cor. of Walnut and Sixth streets, Cincinnati.

LAMPAS IN HORSES.

Mr. Editor:—My attention was called to this subject by passing a blacksmith shop, and seeing a horse refuse to submit to the barbarous operation of having the lampas, as it is termed, burned out.—Now, sir, to save the noblest of animals from that unnecessary torture, I will briefly state my practical experience. It frequently happens that horses are brought to me with the bars on the palate in a state of tumefaction, causing an unnatural prominence of the lower ridges of the palate. I would not trouble you on this supposed malady, but it has called forth infliction of great torture on the animal. Lampas is neither more nor less than a torpidity of the vessels of the palate, caused by an inflammatory condition of the gums which frequently attend the teething process. In such a

case we ought instead of burning out, to remove the cause by lacerating the gums, and this is seldom called for. I find that in the tumefaction of the mouth, arising from whatever cause it may indicate, cooling and astringent washes—a weak solution of alum is very good, or an infusion of witch-hazel or bayberry bark, will answer the same purpose.

The practice of burning out lampas has received the seal of the ancients, but, I trust, in this age of progression, such ancient barbarities will be superseded by practical science.—T. Webb, V. S., *in Zanesville Times.*

"A MAN'S A MAN."

The young man who is struggling with every capability of his to raise himself from obscurity to an honorable position in the world, is a moral hero; for he is fighting the battle of life with a martyr's zeal and a warrior's bravery. His eyes glow with the light of thought, his brow bears the God-given seal of intellect; there is power, will, purpose, in all he does. He has never yet learned the lessons of deceit and falsehood, which too many think requisite to success in every undertaking. He would scorn the base and petty opposition of those who rate themselves as his superiors. But he is the son of poor and humble parents, he his a mechanic. His arms are brawny with constant exercise, his hands hardened by honest labor. He has none of the graces of manner, which characterize yonder mincing dandy.

"A man's a man for a' that," you would perhaps think, but not so the upper classes. "This fellow must not rise," they say; put him down. His athletic form was never made to recline on silken lounges; his strong fingers are not fit to come in contact with the dainty palms or white kid gloves of belledom; his deep voice is not low and sweet enough to murmur the soft nothings of drawing room conversation. Let him keep his place. Let him work."

Yes, let him hope on, toil on. Let his strong original mind be developed and cultivated, till it lifts him far, far above those who have scorned him. Hundreds like him "have walked steadily up ward in the eye of fame," and stood on dizzy hights looking down

on an admiring world. Somebody has said that nothing is denied to well directed labor. If this be true, the struggling youth should take courage. One day he may stand in the high positions of earth, among her most honored and noble sons, and then, the children of luxury may wonder still more, why he did not keep his place.—*N. Y. Teacher.*

IMPORTANCE OF VETERINARY SCIENCE.

No pursuit renders greater service to the country than the veterinary: agriculture, industry, commerce, as well as the army, receive vast aids from it. The domestic animals contribute to our intelligence, to our wants, their superior powers, their wonderful instincts, their ever-ready servitude, their entire substance. They are at once sources of revenue, machines, means of transport, laborers, companions, at times friends even, prime movers, cloths, aliment, docile subjects, with abundant experience. What are they not to us?—They partake of our labors without profiting by them; of our pleasures without enjoyment in them; of our glory even without hesitation. They live and die to serve us, and we seek but too often the secret of our own good at the very heart even of their sufferings.—Veterinary science is still but recent. It dates its foundation but from that of the school we are now in, from less than a hundred years. The future envelopes many discoveries, among which, let us hope, will be found efficacious remedies for some of the terrific diseases yet without means of cure.—*Veterinarian.*

POLITENESS AND TRUTH.

Many persons plead a love of truth as an apology for rough manners, as if truth were never gentle and kind, but always harsh, morose, and forbidding. Surely good manners and a good conscience are no more inconsistent with each other than beauty and innocence, which are strikingly akin, and always look the better for companionship. Roughness and honesty are indeed sometimes

found together in the same person, but he is a poor judge of human nature who takes ill-manners to be a guarantee of probity of character; or suspects a stranger to be a rascal, because he has the manners of a gentleman. Some persons object to politeness, that its language is unmeaning and false. But this is easily answered. A lie is locked up in a phrase, but must exist, if at all, in the mind of the speaker. In the ordinary compliments of civilized life, there is no intention to deceive, and consequently no falsehood. Polite language is pleasant to the ear, and soothing to the heart; while rough words are just the reverse; and if not the product of ill-temper, are very apt to produce it. The plainest of truths, let it be remembered, can be conveyed in civil speech, while the most malignant of lies may find utterance, and often do, in the language of the fish-market.

CINCINNATI HORTICULTURAL SOCIETY.

(CONTINUED FROM PAGE 285.)

HORTICULTURAL HALL, May 9th, 1857.

PRESIDENT in the chair.

The Corresponding Secretary reported a communication from Hon. T. C. DAY, who had generously offered to supply to all members of the Society, desiring them, copies of the U. S. Patent Office Report on Agriculture, for 1855, and requesting members to leave their names with the Corresponding Secretary for that purpose.

On proposition from Mr. HOOPER, Mr. A. LABROT was elected to Membership.

An interesting communication was received from Mr. GABRIEL SLEATH, and read by the President, which was, on motion of Mr. HOWARTH, ordered to be filed and published with the proceedings. Also a communication from N. LONGWORTH, Esq., on the subject of grafting the Plum and the Garpe was read; and on motion was referred to a select committee, consisting of Messrs. JACKSON, SAYERS and KELLY.

Mr. WARD stated that the correction that he had made some

time since, of the statements attributed to him, in the discussion of late held with Mr. CARY, had not been published; desired the privilege of correcting the misconceptions of his views, and on motion of Mr. ERNST it was ordered that, "In consequence of the loss of the former paper presented in said matter, Mr. WARD be requested to again write out and furnish for publication, his views on the points as then presented."

REPORT OF THE FRUIT COMMITTEE.

Mr. HOOPER, from the Fruit Committee reported that eleven varieties of apples are exhibited by Dr. T. V. PETTICOLLAS, viz. Broadnell's sweet, Black apple, N. Pippin, Rome Beauty, Pryor's Red, Sansinberry, Peach Pond sweet, Romanite, (so labeled, but found to be the Sansinberry.) White W. Pearmain,—(so labeled, but found to he Michael Henry Pippin), Smith's Cider, and one other, (supposed to be a seedling). Also the "Liberty" apple, by A. H. ERNST—in reference to which the Committee fully indorse the opinion of the Ohio Pomological Society, when they pronounced "good, late winter"—as quoted in HOOPER's Western Fruit Book.—The Committee further Report, that, with the exception of the "Yellow N. Pippin," "Pryor's Red," "Liberty," and "Sansinberry," the foregoing apples were too far gone out of their season to be in, or near, their most perfect state; the Smith's Cider, and Michael Henry Pippin, however presented a fine appearance.

On motion of Mr. ERNST, Prof. WARD was requested to favor the Society with a "Paper" on the "Honey Bee," and Prof. WARD assenting, the same was made the order of the day, at the next meeting.

SATURDAY, May 16.

President in the chair.

Various members announced that though late into the season, the development of both orchard and garden, gave promise of prolific abundance in the coming summer and autumn. It was likewise mentioned, that while the orchards are laden with fruit-buds and blossoms, the trees are also infested, to an unusual degree, with the ova, and larvæ of destructive insects; and mutual exortations were given to the early adoption of measures for the extermination of those Horticultural thieves and robbers.

The President announced Mr. WARD's "paper" on the "Honey Bee," as the special order of the day; whereupon Mr. HOWARTH

moved that,—Inasmuch as by reason of the failure of the press to announce this order of the day; the same had not become extensively known, and that thereupon M. WARD's "paper" be postponed till next week, and it was carried: So the special order was continued.

On motion it was ordered that the Council procure, and present the Premium List for the autumn exhibition at the next meeting.

Mr. SCARBOROUGH laid on the table for distribution, handbill copies of the late law for preventing the destruction of insectiverous birds, and a vote of thanks was tendered to Mr. SCARBOROUGH, for his activity and efficiency in this behalf.

Mr. BUCHANAN exhibited the following apples in a fine state of preservation—viz. Rawles' Janet, White Pippin, Yellow Newton Pippin, Wine Sap, and Buchanan's Pippin.

Mr. MOTTIER exhibited some beautiful specimens of Rhubarb stalks (Victoria variety) and superior Asparagus. Some seeds of the *Kohlrueterea Panaculata*,—a flowering shrub, indigenous to the Rocky Mountain region, were presented for distribution, by Mr. P. BUSH.

SATURDAY, May 23.

Vice President STOMS in the chair.

Dr. MOSHER exhibited some remarkably fine specimens of Rhubarb, of the Victoria variety, the stalks being long enough for walking-sticks, and thick enough for *shilalahs*

The standing Committee on Vegetables not being present, Messrs. FOOTE and MULLETT were appointed a special committee, who submitted the following report:

"The special committee appointed to examine the specimens of Rhubarb exhibited by Dr. MOSHER, report: That the exhibition consists of twelve stocks, which weigh *twelve and a half pounds*—being, of course, remarkable for size. It is also of a variety that the committee commend as of the most desirable for family use."

In view of the recent agitation of the subject of a City Park before the public mind, Mr. HOWARTH moved the appointment of a committee to take into consideration and report upon the utility and expediency of a City Park, which was carried; and Messrs. FOOTE, BUCHANAN and HOWARTH were appointed as the committee.

Mr. SAYER, from the Special Committee to which was referred

Mr. LONGWORTH'S communication on the subject of grafting the Plum and the Grape, reported progress, and the committee was continued.

Mr. WARD, from the Council, announced that the City Lot, between Eighth and Ninth-streets and Plum and Western-row, had been secured as the place for the Society's annual exhibition in September, and that the privilege had been granted free of charge; whereupon, on motion of Mr. HOWARTH, the Society tendered a vote of thanks to the City Council for their generous grant in that behalf.

The special order, being Professor WARD'S paper on the Honey-bee, was announced by the Chair, and Professor WARD proceeded to give a highly interesting and instructive lecture upon that highly interesting and instructive insect, the Honey-bee. As time would not permit to give anything like a full exhibit of the peculiar economy characteristic of this wonderful insect at a single session, Professor WARD confined himself, for the present, to the physiology and functions of the propagative system of the Bee. He discussed the sexual organism characteristic of the three classes, the queens, the drones and the workers; the queens being females, the drones males, and the workers practically neuters, or, more properly, females, but without a full development of the sexual organism. The idea having gained credence that the queen-mother had a specific capacity for determining the particular sex of her offspring according to her own instinctive will, Professor WARD suggested that, among the many errors that had crept into the entomology of the Bee, this was probably one, and advanced the original suggestion that the determination of the sex of the fecundated ova depended rather upon the mechanical pressure upon the body of the queen mother, incident to the different capacity of the cells, than upon any supposable voluntary determination on her part. This, Professor W. said, he intimated as an opinion, and requested members to aid him in a conclusion by their separate observations.

The lecture was characterized by ability and research, and was received with great satisfaction by the audience present. At its close, Mr. ERNST moved that, in view of the great interest which the subject affords, and the impossibility of discussing it fully at one time, Professor WARD be solicited to continue the same, as a series, before the Society; and that the same be set for the special order at each weekly meeting until completed—which was unanimously adopted.

The Fruit Committee submitted the following report: "Apples, from T. V. PETTICOLLAS, Yellow Belleflower, Newtown Pippin, White Winter Pearmain (not the Michael Henry), Rome Beauty. All of these present a fine external appearance, but on cutting were found to be too far out of season, excepting the Yellow Newtown Pippin and Yellow Belleflower, which were excellent, especially the Yellow Newtown Pippin. Mr. MULLET also presented some of his seedlings, which were found even now to be in good, sound, eating condition, with a pleasant, lively sub-acid flavor—therefore a *very great keeper.*"

SATURDAY, May 30.

Vice President STOMS in the chair.

The Special Committee on Mr. LONGWORTH'S communication made an informal report, and further time given.

On motion of Mr. KELLY, the matter of the Premium List was referred to the General Committee and the Council, to report on the accuracy of the schedule now presented.

On motion of Mr. HOWARTH, the Council was empowered to have the Premium List printed, and one thousand copies thereof ordered.

On motion of Mr. ERNST, the several Standing Committees were authorized to award such premiums as they might deem just and proper for such productions of flowers, fruits and vegetables, as might be presented before the Premium List was completed.

Prof. WARD not being present, the order of the day, being his essay on the Honey bee, was continued.

Mr. ERNST exhibited some branches of Plum, Pear and Cherry, all remarkably burdened with fine growing fruit—the Plum branch, only about eighteen inches long, showed the prolific number of *fifty-five* Plums thereon.

Mr. STRICKER, of Storrs Township, exhibited some mammoth Rhubarb, nine stalks weighing nearly eleven pounds.

SATURDAY, June 6.

Vice President STOMS in the chair. Minutes read and approved.

None of the committee being present to report any thing for the action of the Society, the members proceeded, informally, to consider the subject of the ravages of the caterpillar.

Mr. HOWARTH remarked that in his neighborhood many fruit trees were completely "riddled," and the great practical question now is

how to prevent their migration; for when their supplies are exhausted, like sensible animals, they take up their line of march to other quarters.

Dr. PETTICOLLAS said that his orchard had been kept clean by shooting charges of powder into the nests when forming the web, while some in the neighborhood, by neglect, have had their orchards stripped of fruit and foliage.

Mr. TAYLOR said he had successfully resorted to the process of applying blazing paper to the nests in the web.

Mr. BUCHANAN did not approve of the process mentioned by Mr. TAYLOR, inasmuch as the degree of heat requisite to insure the destruction of the insect—which is the only effectual cure—would be likely to injure the tree. And his process was, to go, early in the season, carefully through his orchard and destroy the eggs of the nests wherever found. And he had found that, though exceedingly numerous among orchards this season, the labor of his man for not more than two entire days, had effectually secured his orchard from their ravages by this course.

Mr. MOTTIER remarked, that on his farm he had about five thousand fruit-trees exposed to their depredations, and his plan of protection was simply to have his little boy, not more than twelve years old, not so heavy as to damage the branches by his weight, go into the trees whenever the nests are discoverable, and with his hand scrape eggs and all clean from the limb, and place all within a little sack, taken under his arm for that purpose; and having this secured them, would cast sack and all into the fire, or into boiling water, in order to insure the destruction of the insect. This primative but effectual method of warfare, he said, had perfectly protected his large orchards from the ravages of this horticultural pest. Mr. MOTTIER's process seemed to meet with the general approval of the members.

FRUIT EXHIBITED.

Mr. MEARS, of the Fruit Committee, reported: Strawberries, by J. & M. CULBERSON, Kentucky, a seedling from seed of Hudson & Washington; sexual character, pistillate; fruit of large size, fine color and early maturity, being within one or two days as early as the Washington. By A. L. REEDER, "McAvoy's Superior;" specimens very fine; and on recommendation of the Committee, premiums of $2 each were ordered for the two kinds exhibited.

Giant Asparagus, by Mr. MOTTIER, eight dozen, of growth so de-

cidedly superior that the Committee awarded, without hesitation, a premium of $2 therefor.

Apples, by Dr. PETTICOLLAS from EMOR JOHNSON, White Winter Pearmain, seedling, a good keeper, Parker Apple, a seedling, all in fine condition, with the flavor well preserved. Also, Apples, by W. E. MEARS for J. H. SAYERS, from Gallatin County, Kentucky, some splendid specimens for the season—so fine that they readily sold this morning at *eight dollars per bushel*—found at FINAN'S corner of Fifth and Lodge-street. Mr. MURRAY, of Warren County, sent in a box of beautiful Sweet Potatoe plants for distribution. These came to hand in fine order and were most acceptably received. A vote of thanks was tendered Mr. MURRAY for his well-timed and acceptable present.

At the close of the meeting Mr. PENTLAND announced that he had just received a letter from our highly esteemed and excellent friend, GABRIEL SLEATH, honorary member of the Society, informing us of his safe arrival in England, and that in due time the Society would hear from him in a Horticultural way. This announcement gave great pleasure to the members of the Society.

SATURDAY, May 13.

Vice Presdent STOMS in the chair. The minutes being read, Mr. HOWARTH suggested an amendment to the report of his views on the ravages of the caterpillar to the effect that his aim was altogether in reference to the prevention of their migration from tree to tree, and added that this migration might be prevented by surrounding the trunk of the tree with convex-shaped paste-board, saturated with tar, or by circling the trunk with tar alone, which would prevent their ascent to the branches,

Mr. SAYERS, from the special committee to whom was referred the subject-matter of Mr. LONGWORTH'S communication in reference to grafting the plum and the grape, read their report, which was on motion, received ordered to be filed, and the committee discharged.

The Corresponding Secretary laid before the Society forty-six volumes of *Ohio Agricultural Reports*, from 1850 to 1856, presented by Hon. ROBT. HOSEA for distribution, who informed the Society that he would furnish more if desired; also some packages of seeds from United States Patent-office, presented by Hon. G. E. PUGH.—It is to be regretted that the seeds were not received earlier in the season.

On motion, the Society tendered their thanks, by vote, to Messrs. HOSEA and PUGH for the favors thus conferred.

The Secretary als o acknowledged the receipt of additional copies of *Transactions of the American Pomological Society* from Colonel WILDER, of Massachusetts, and the *Transactions of the Connecticut State Agricultural Society* for 1856, presented to the Society's library by Dr. MUSSY, for which a vote of thanks was tendered.

A communication from Mr. LONGWORTH was read and ordered to be printed:

To the Cincinnati Horticultural Society.

This season the McAvoy's Superior has, for the first time, produced a small crop, and a large portion of defective berries, from a want of full impregnation. This failure has been frequently named in your Society, and suggested that the difficulty would be removed if every other row was staminate or hermaphrodite. I could see no reason why this should secure a full impregnation, as insects carry the farina ten feet or more, and produce a full impregnation with other pistillates. Last spring I set out fifteen alternative rows of the Superior and Prolific. On the same border I had about twenty rows of pistillates and twenty of hermaphrodites in succession.—The Superior, in alternate rows with the Prolific, are as badly impregnated as those, where the kinds are ten feet apart. I regret to find this peculiar character in the Superior, as I deem it superior to all other pistillates, if not sometimes subject to this defect. I have but few pistillates yet ripe, but send you a few berries of our Extra Red, which Mr. PRINCE pronounces "the most worthless of all strawberries." I deem it, as a market fruit, of more value than other pistillates, from the uniform large size of the fruit, because it bears a larger crop than any other variety, and, in beauty of color, has no rival; which, as I deem would give it the largest sale in market. The Iowa, now called the Washington, is now cultivated extensively, as a market fruit. This variety (hermaphrodite) I procured in Iowa, some twenty years since, and it then ranked high as a hermaphrodite, as we had none of that character bearing as large fruit and as large a crop. It varied with the seasons. Some years nearly all the blossoms are perfect, in both male and female organs; some seasons the reverse, and bearing not more then half a crop, from a defect in the pistils. Many of the berries were of small size, and they did not average two-thirds as large a crop as the Prolific produces, and the average size of the Prolific much larger. I shall be pleased to give plants of the Prolific and Extra Red to any of our market gardeners disposed to give them a trial. I request you to refer the subject to a committee of your Society, who have fully tested the value of the Extra Red, to make a report of its character, and support the opinion of Mr. PRINCE, if he is correct, and save our market gardeners from a loss by cultivating "the most worthless

of all strawberry plants." I trust you will raise seedling strawberries extensively this season. I am convinced that hermaphrodites, perfect in both male and female organs, and bearing large crops of very large fruit, will be more frequently produced than we have expected, and plants raised, not only equal, but superior to what I deem the most valuable of all Strawberries our Prolific.—Hard as times are in these Democratic, no-bank days of ours, I will give you $25, to pay as a premium for a new seedling hermaphrodite, superior, in your opinion, to the Prolific, and a large sum for a pistillate, bearing a full crop, and equal in size and quality to McAvoy's Superior, when it is not injured by a want of impregnation. You will discover from some bunches of the Extra Red that I send you, how badly they are impregnated for want of insects. I send three perfect berries. How much larger berries have you ever seen of Mr. PRINCE's prize-plants that he sells at $5 or $8 per dozen? I send you one berry of "Boyden Seedling." It is a hermaphrodite.

Mr. Boyden resides in Newark, New Jersey, and is one of the best machinists of that State, and, though poor, perhaps not worth $800, did not charge from $5 to $8 per dozen for plants; in fact, absolutely refused all pay, and proffered all I desired. He is *not* a member of the Peabody contract! Respectfully,

N. LONGWORTH.

Pursuant to the request contained in Mr. LONGWORTH's communication, a special committee of three, consisting of Messrs. WARDER, HOOPER and PENTLAND, was appointed to report thereon.

Colonel CALDWELL, as Chairman of the Council, reported the Premium List for 1857, which was received and ordered to be printed.

Mr. MEARS moved to appoint a committee of three to inquire into and report upon the present restrictions upon the fruit market of Cincinnati, which motion was carried. On division thirteen votes affirmative to ten negative, and Messrs. FOOTE, WHITE and MULLET were appointed.

On motion of Dr. MOSHER, it was ordered that, on next Saturday, the Society begin the exhibition of Strawberries and Cherries for premiums, under the schedule of the premium list, and that the exhibition be continued weekly during the season of the fruits respectively, for final award of the premiums.

FRUIT EXHIBITION.

Mrs. MAXWELL presented some curious and interesting productions of Cuba. Among others, a species of Potato, something similar to the Yam, which had vigorously sprouted in her trunk during the voyage. A queer place, that—a lady's band-box—to grow

potatoes in! Apples from Mr. MOTTIER—Newtown Pippin, Wine Sap, Smith's Cider and Rawle's Janet.

All these, as reported by Mr. HOOPER, Chairman of the Fruit Committee, are in a state of preservation most extraordinary for the lateness of the season. Rawle's Janet, particularly, is juicy and fine flavored, deserving all and even more than its present reputation.

Strawberries.—Mr. HOOPER reports: The Boyden Seedling, exhibited by N. LONGWORTH, is a magnificently large berry, apparently rather larger than the Hovey, judging from the specimen (only one) before us. It is hermaphrodite, and from Newark, New Jersey.—The flavor is about as good as the Prolific—rather tender. The Genessee—exhibited by Mr. MEARS—is a large bright-colored and most uniformly-shaped fruit, rather more acid than last year, owing, probably, to greater rains, but of good flavor; most beautiful berry, very pleasant, but not so rich as either the Hovey or Superior rather firm, and the plants of great vigor. Eberieen Seedling—by Mr. CARY—small, pleasant, and, allowing for the wetness of the season, is rather sweet and rich. Johnson Seedling, of medium size, rich and sweet.

Schneicke's Excelsior, (Mr. LONGWORTH'S) neck shaped and very like, but much larger than the Neck Pine—not high flavored, but tender and good. Prolific, not of very rich flavor; peculiar, but probably pleasant to most persons; quite as well impregnated as any other before the committee, even better than the Superior. The McAvoy's Superior fully sustains its high reputation for rich flavor, though not so sprightly as the Hovey, which might, on that account, be preferred by some.

Cherries.—A very beautiful cluster of the Early May, containing sixteen perfect cherries in the single cluster, of fine appearance and delicious flavor, exhibited by Mr. ALLEN, our Secretary. Also, a very fine branch of May Duke, laden with fruit, and, as usual, with this variety, in an unequal stage of ripeness.

E. J. HOOPER, Chairman.

It was announced by the chair that the Society would meet promptly at ten o'clock A. M., next Saturday.

Several ladies graced the meeting by their presence, and at the next meeting, when the Strawberry exhibition opens, we shall expect and hope for their general attendance.

ONE BY ONE.

One by one the sands are flowing
One by one the moments fall;
Some are coming, some are going,
Do not strive to grasp them all.
One by one thy duties wait thee,
Let thy whole strength go to each;
Let no future dreams elate thee,
Learn thou first what these can teach.

Ono by one, (bright gifts of heaven,)
Joys are sent thee here below;
Take them readily when given,
Ready too to let them go.
One by one thy griefs shall meet thee,
Do not fear an armed band;
One will fade as others greet thee
Shadows passing through the land.

Do not look at life's long sorrow,
See how small each moments pain;
God will keep thee for to morrow,
Every day begin again.
Every hour that fleets so slowly,
Has its task to do or bear;
Luminous the crown and holy,
If thou set each gem with care.

Do not linger with regretting,
Or for pending hours despond!
Nor this daily toil forgetting,
Look too eagerly beyond!
Hours are golden links, God's tokens
Reaching heaven; but one by one,
Take them, lest the chain be broken
Ere the pilgrimage be done.

—*From Household Words.*

METEOROLOGICAL TABLE.

Observations made at Farmers' College, College Hill, Hamilton County, Ohio, Latitude 39° 19′, *W. Lon.* 7° 24′ 45″ *for the month of May,* 1857, *by Prof. R. S. Bosworth. Hight of Station above the Sea,* 800 *feet.*

	Barometer, corrected for temperature & capillarity.				Open air thermometer.				Clouds—course & velocity.						Wind—direction & force.			Rain & melted snow.		
	7 A. M	2 P. M	9 P. M	Mean.	7 A. M	2 P. M	9 P. M	Mean.	7 A. M.		2 P. M.		9 P. M.		7. A. M.	2 P. M.	9 P. M.	Hour Began.	Hour Ended.	Am't Inch.
1	28.875	28.845	28.893	28.871	54.0	61.0	60.0	58.3	10	S. 5	10	S.	9	S.	S. 2	S. 2	0	in night.	3 P. M.	1.180
2	28.888	28.988	29.076	28.984	51.5	50.5	46.0	49.3	10	N.W. 9	10	N.W. 5	9	N. 2	N. W. 2	N. W. 3	N. 1	in night	7 A. M.	0.060
3	29.086	29.002	28.942	29.010	51.0	57.5	47.5	52.0	4	S. W. 5	10	N. E. 4	10	N.E. 4	E. 1	E. 1	N. E. 2			
4	28.594	28.483	28.616	28.564	45.0	62.0	46.0	51.0	10	N. E. 9	5	S. 8	10	S.W. 5	N. E. 5	S. 4	S. W. 2	in night	1 P. M.	1.500
5	28.786	28.936	29.052	28.925	45.0	52.0	45.0	47.3	10	w s w 9	10	W. 6	5	Cirri.	W. 6	W. 6	N. W. 1			
6	29.054	29.041	29.100	29.065	49.0	59.0	45.5	54.5	9		2	Cirri.	0	0	0	N. 1	N. 1			
7	29.166	29.115	29.135	29.138	48.0	70.0	59.0	59.0	0	0	0	0	0	0	0	S. W. 3	0			
8	29.205	29.122	29.085	29.137	57.0	79.0	63.0	66.3	1	0	2	Cirri.			0	S. E. 2	S. E. 1			
9	29.120	29.000	28.914	29.010	66.0	80.0	70.0	72.0	6	S. E. 4	4	S. 6	6	cum.st.	S. E. 2	S. 7	S. W. 3			
10	29.022	29.105	29.145	29.090	52.0	53.5	46.5	50.7	0	0	4	N.W. 6	10	N. W. 5	W. 4	N. W. 4	N. W. 4			
11	29.170	29.146	29.174	29.163	36.0	45.0	33.0	38.0	10	N.W. 2	9	N.E. 4			N. E. 2	N. E. 1	N. E. 2			
12	29.224	29.153	29.170	29.182	38.0	59.0	50.0	49.0	0	0	0	0	0	0	E.N.E. 1	N. E. 1	0			
13	29.116	29.018	28.800	28.978	52.0	62.0	58.0	57.3	10	Nim.	9		10	S. E.	E. 1	E. 2.	S. E. 1	8 A.M.	11 A. M.	
14	28.750	28.700	28.664	28.705	65.5	78.5	65.0	69.7	9	S.W. 10	4	S. W. 8	8	S. W. 5	S. W. 2	S. W. 3	S. W. 6	3½ A.M.	6½ A.M.	0.550
15	28.750	28.893	28.995	28.880	52.5	55.0	49.5	52.3	8	W. 5	10	W. 8	4	N.W. 1	W. 4	W. 4	N. W. 1			
16	29.090	29.055	29.095	29.080	48.0	67.0	55.0	56.7	0	0	0	0			N. E. 1	0	N. W. 3			
17	29.196	29.125	29.128	29.150	51.0	60.0	54.0	55.8	2	Cirri.	10	N. E.	10	N. E.	N. E. 4	N. E. 5	N. E. 4			
18	29.033	28.938	28.958	28.976	47.0	51.0	44.5	47.5	8	N. E. 2	10	N. E. 6	10	N.E. 4	N. E. 5	N. E. 3	N. E. 1	1 P.M.		
19	28.940	29.020	29.100	29.020	43.5	50.0	47.5	46.8	10	N. E. 8	10	N. E. 7	10	N.E. 1	N. E. 3	N. E. 6	N. E. 1		in night	0.590
20	29.130	29.100	29.130	29.120	47.0	62.0	47.0	52.0	0	0	0	0	0	0	N. E. 4	N. 4	0			
21	29.150	29.100	29.085	29.112	50.0	68.5	55.0	58.2	2	Cirri.	2	Cirri.	0	0	N. 1	N. 1	0			
22	29.128	29.072	29.050	29.083	58.5	75.5	59.0	64.2	0	0	0	0	0	0	N. W. 1	W. 1	0			

23	29.072	29.024	29.030	29.042	66.5	85.0	65.5	72.3	2	N. 1	4	S.W. 1	0	0	S. 1	S. W. 4	0			
24	29.057	28.990	29.004	29.017	67.5	84.0	69.0	73.5	0	0	1	0	0	0	0	S. W. 5	0			
25	28.990	28.900	28.920	28.937	70.0	83.0	62.0	71.7	0		5	S. W. 6	4	0	S. W. 1	S. W. 6	0			
26	28.905	28.842	28.857	28.868	61.5	77.0	61.5	66.7	10	S. 5	4	S. W. 8	9	S.W. 5	S. 2	S. W. 6	S. W. 1	10 P. M.		
27	28.915	28.855	28.830	28.866	62.0	72.0	60.0	64.7	5	W. 6	2	W. 4	4	Cum.	W. 4	W. 4	W. 1		last night.	0.320
28	28.935	28.860	28.900	28.898	62.0	67.0	54.0	61.0	4	W. 8	5	W. 6	4	W. 2	W. 5	W 5	W. 1	In Night.	"	0.188
29	28.915	28.885	28.915	28.905	55.5	68.0	54.0	59.2	0	0	1	W. 5	0	0	W. 4	W. 4	0	"	"	0.060
30	28.918	28.782	28.822	28.841	62.0	73.0	60.0	65.5	8	Str.	10	E. 4	10	W.	0	E. 1	S. W. 2	9 A. M.		
31	28.882	28.852	28.830	28.855	63 0	72.0	62.0	65 7	10	S. W. 5	10	S. W. 8	5	W. 1	S. E. 2	S. 1	0	3 P. M.	6 P. M. In Night.	1.590
Sums.				898.473				1814.9												6.038
Means.				28.999				58.5												

REMARKS ON WEATHER.

2. A dash of rain at 7P. M.
4. Barometer stood at 28.500 at 1 P. M. Some rain 5 and 6 P. M.
7. Peach and Cherry in full bloom.
9. Baltimore Orioles appear.
12. Minimum Thermometer 29½° last night, a hard frost.
14. A violent thunder shower this morning. Thunder very heavy.
17. Apple trees in full bloom.
23. Maximum Ther. 86.5.
25. Locust leaves half devoloped.
26. Beech and Maple leaves well-formed.
27. Dog-wood (Cornus Canadensis) in bloom.
31. Rain ceased this morning and commenced again at 3 P. M.

Remarks.—A very backward wet month. One third as much rain as fell during the whole previous year, fell during this month.

Explanation.—The state of the sky is indicated in this table by numbers from 0 to 10; 0 signifies perfectly clear sky, 10 that it is entirely covered with clouds, and intermediate numbers show the number of tenths clouded. The direction from which the wind blows is shown in the initials of the points of the compass. Its force is indicated by numbers; 0 meaning a perfect calm, and 10 the most violent hurricane.

MONTHLY EXTREMES.

	MAXIMA.				MINIMA.			
	7 A. M.	2 P. M.	9 P. M.	Month.	7 A. M.	2 P. M.	9 P. M.	Month.
Barometer, . . .	12th. 29.224	12th. 29.152	11th. 29.224	29.224	4th. 28.594	4th. 28.483	4th. 28.616	28.483
Thermometer . .	25th 70.0	23d. 85.0	9th. 70.0	86.5	11th. 36.0	11th. 45.0	11th. 33.0	29½

TO CORRESPONDENTS.

L. A. C.—The word *cirri* in the Meteorological Table, denotes that kind of cloud as visible at the time of the observation. Meteorologists recognise three principal forms of clouds, and their combinations. The light thin clouds, high up in the air, in long streks or curls are denominated, *cirrus* clouds. Those that are piled up like heaps of wool are termed *cumulus.* Flat level lying clouds, *stratus.* A combination of any two, takes the name of both kinds, as *cirro stratus*, *cirro cumulus*, etc. The rain clouds is named *Nimbus.*

J. M.—You can obtain good achromatic microscopes at a moderate price, of JAS. FOSTER, Optican, S. W. corner of 5th and Race Sts., Cin.—QUEKETTS, treatise on the Microscope can be purchased of ROBERT CLARKE, Bookseller, opposite the U. S. Hotel on 6th, St. He has also CARPENTER'S and HOGG'S work on the same subject.

MELTED STONE.—Near Birmingham, England, works have recently been started for the manufacture of architectural decorations in basalt by melting and casting in hot moulds. The products are very firm and beautiful, and are assumed to be very durable. When cast in cold moulds, a glossy lava termed obsidian is produced. The material generally employed is the ragstone of the neighborhood, but furnaces have been erected for the reduction of quartz by direct fusion according to a new process, in which the pulverized quartz is mixed with flour spar, lime, and oxyde of iron, which agents combine with the silica and render the whole perfectly fluid.

ERATA.—On page 267 of the June number, under the heading of "WOODBURN FARM," instead of 280 acres read 2800 acres.

TOP OF Mt WASHINGTON 6285 FEET ABOVE THE LEVEL OF THE SEA

THE CINCINNATUS.

VOL. II. AUGUST 1, 1857. NO. 8.

SEXUALITY OF PLANTS—FECUNDATION, HYBRIDIZATION, ETC.

IN previous numbers of the "CINCINNATUS," we discussed at some length the physiological character of the root, stem and leaves, and their important functions, and gave the practical bearings of the facts and principles developed to the Agriculturist and Horticulturist. We will in our present number resume in a similar manner, the discussion in relation to what may be denominated the reproductive system of plants, or those parts especially employed in the germination and maturation of the seed and fruit.

And we can not approach this subject without being deeply impressed with the conviction that there is not a more remarkable and interesting class of phenomena in the entire vegetable kingdom than that under consideration, and under this felt conviction are led to exclaim, in the language of the Psalmist: "O Lord how manifold are Thy works, in wisdom hast Thou made them all."

The teachings of nature in relation to her numerous forms, correspondences, and adaptations are not only surpassingly interesting, but when properly studied will be found to contribute their full quota of utility in application.

It is evident that the root, stem and leaves would not suffice to fit the plant for the discharge of all its functions. It needs, among others, organs or appendages for covering, for support, and for enabling it to propagate and perpetuate itself. To meet these wants members are found to spring up at the very *place* where they are needed, and at the very *time* when they are needed; and when they

appear, they come not as absolutely new organs, but after the old type, modified to serve the present purpose. The general plan of the Great Architect is kept up, and yet every several member fulfills a purpose. That the species may live on in a new individual, we have the calyx, the corrolla, stamens and the pistil, all subserving important ends whose design can not be mistaken. It is to the stamen and pistil, the two most important organs of the flower, we would at present direct attention. These organs constitute what is called the sexual character of plants. The stamen is called the male, and the pistil the female organ. This doctrine constituting the foundation of the Linean system, though but recently established upon the basis of logical induction is by no means novel. It was entertained among the Greeks, ARISTOTLE and THEOPHRASTUS maintained it, and PLINY, DIOSCORIDES and GALEN adopted the division by which plants were then distributed into male and female. This, however, was upon the erroneous principle of habit or aspect, and without any reference to any absolutely sexual distinction.

LINNAEUS, after devoting great labor and research to this subject, came at length to the conclusion that no seed is perfected without the previous agency of pollen, and that the doctrine of the sexuality of plants is consequently founded in fact. This doctrine of the male and female organs in plants, opened a new field of observation, by directing attention to the mode of action which they exercise upon each other.

Until lately, and even now, among the most of our agriculturists, this principle is but little understood. We are fully persuaded that it is in the proper attention to the application of this principle that we are to look for the permanent improvement of our seeds, plants and fruit. By engrafting and budding, and the various modes of propagating, the better kinds of individuals, may be indefinitely extended without material change throught the cycle of their existence; but it must be through skilfull* hybridization, or more properly, crossing, that new and superior kinds must be obtained unless, as hitherto, this may occur by chance or mere accident; as now all admit, that if we are to improve upon our present fruits, it must be from the seed. Yet who does not see that

*Cross breeding, or as it is called, hybridization, is the removing from the blossom the stamens, or male parents, and bringing those of another and different variety of fruit, and dusting the pistil or female parent with them.

as seedlings are now obtained the chances for a superior fruit are against us by a fearful odds. The fickle winds, the capricious insects, may, or may not, carry in quantity and quality, the fertilizing dust from the best sources to give excellence to fruit and vigor to tree, but man is provided with the knowledge and ability to do this with a good degree of certainty. In ten thousand ovules, fertilized in the ordinary way, who would wonder should there be no improvement of the seed originating therefrom; in most there will be found, by experience, positive degeneracy. It was from millions of strawberry seeds sown and germinated, that twelve plants only were taken as worthy of cultivation, among which LONGWORTH's prolific, or number five, and MCAVOY's superior, or number twelve, stand pre-eminent. The former a hermaphrodite and the latter a pure pistilate plant. No one in these days thinks of trusting to a seedling apple or peach, yet it is from the seedling alone we are to expect new and improved varieties. And the necessity of turning attention to seedlings must every day appear the more obvious, as our standard fruits are fast filling up the cycle of their existence, and fast running out. The White Bellfleur, Rhode Island Greening and Newtown Pippin among our apples, may be mentioned as examples. They are by no means the apples they once were.

It is to call attention to this important subject, of the improvement of our grains, fruits, vegetables, etc., that we have ventured to discuss the subject under consideration, believing that in the proper understanding and application of its principles the most important results would be secured. To the uninitiated a little more particularity of description is here deemed necessary.

The particular organs whose functions we are contemplating, viz: the Stamen and the Pistil, occupy the interior of the flower or corolla. The stamens, or male organs, are terminated by summits of a vascular texture, called anthers; the powder which covers and sticks slightly to them is called pollen. The pistil occupies an interior or central position where both organs are in the same flower, and are composed of the ovary, the style, and the stigma. The ovary encloses the germ; the embryo of the seed. This embryo can only be developed by the action of the pollen. This style may be called the tubular prolongation of the ovary; it supports the stigma, which is the glandular part that receives the fecundating influence of the pollen. The stamen effects, through the agency of this pollen, the fertilization of the embryo seed contained in the pistil. As to the

precise *modus operandi* of the fertilization of the ovary naturalists are divided, and, according to their several opinions, have been classed under the respective appellations of ovarists, animalculists and epigenesists.

The Ovarist maintains that the embryo pre-exists in the ovary, and is fecundated by the agency of the pollen, as transmitted, to it through the style.

The Animalculist says: "that as the embryo is never found to make its appearance till after fecundation, it must necessarily pre-exist in the pollen of the anther, from which it is conveyed to the ovary through the medium of the style, and afterwards matured. According to this theory it is assumed that there pre-exists in the pollen the seminal or male principle, and that this is conveyed to the ovary, where alone it is capable of development.

The theory of the *Epigenesist* is, that the embryo pre-exists neither in the ovary nor pollen, but is generated by the union of the fecundating principles of the stamen and pistil: the former being the fluid, issuing from the pollen when it explodes, and the latter the fluid that exudes from the surface of the stigma when mature.

These several theories have their respective adherents and defenders, and the field is yet wide for examination and research, through the medium of our present improved microscopes joined to a most rigid analysis and close observation. Whether any one of these theories be the true one, or whether the one finally approved may not be a modification of the three, or yet entirely distinct, the result to the practical cultivator is the same. The curious observations of Brongniart respecting the generation of plants seems to throw quite a new light upon this interesting subject. He says:

"When the grains of pollen are placed in contact with the surface of the stigma, they project their tubular appendage. The latter, when the surface of the stigma is naked, insinuates itself more or less deeply within the utricles of the stigma. The granules of the pollen quickly collect near the free extremity of the appendage, which swell, and assumes a slight degree of opacity. The grain of pollen then shrivels and withers. Soon after the extremity of the appendage opens, and the granules of the pollen are laid bare, and come in contact with the mucilagenous substance of which we have spoken and which connects the utricles of the stigma. They are then seen in little masses, which successively penetrate to a greater depth in the direction of the style. When the utricles of

the stigma are covered by an epidermis, the tubular appendage is applied to the surface of this epidermis and sticks to it by its extremity. Both then open and the granules of pollen come in contact with the intercellular matter of the stigma."

These spermatic granules, adds BRONGNIART, penetrate into the intercellular intervals of the stigma, and when they have arrived at the ovule, the granules of pollen penetrate, by the opening which exists in the two membranes, and then passing through a delicate membranous tube, which issuing from the kernels applies itself upon the placenta, and there takes up the fecundating granules to convey them into the interior of the ovule. After impregnation there are seen to form in it opaque granules, of a green color, which at last form the embryo. Such is the theory resulting from the observations of this distinguished Physiologist. This theory will be found quite analogous to the same phenomenon observed in the animal kingdom. Many inquiries here present themselves to the mind of the curious, which can not be discussed at this time.

Such flowers as combine the organs of the two sexes, are called hermaphrodites; those which contain but one organ unisexual.

Polygamous plants are such as show a union of male and female flowers. The term *Monoecious* is applied to that class of plants whose stamens and pistils are in distinct flowers, both growing upon the same individual; *Dioecious* to those having the stamens on one plant and the pistils on another.

In the monoecious and dioecious plants, although the two sexes are separated, and often placed at a distance from each other, fecundation is not on that account prevented from taking place. It is remarkable and interesting to witness nature's adaptations and the modus of doing her own work. In some flowers the sexual organs at the period of fecundation acquire the property of motion, so as to facilitate this operation. The stamens, for example, in certain plants are seen to approach the stigma to deposit upon it their pollen and then withdraw. It sometimes happens that the stamens, at first naturally inclined with reference to the pistil, become suddenly straightened in such a way as to cast their pollen on the pistil and afterwards assume their original position. Plants immersed in water often elevate their stems, as the season of flowering advances, when they at last rear their heads above the surface of the water and present their opening blossoms to the sun, until impregnation takes place, when the petals fade and the plant gradually sinks

back into the water to ripen and sow its seeds. Others are always submerged, on which it is evident that the grains of pollen do not attach themselves to the stigma, as before described; yet fecundation takes place, as in other plants, by a process peculiar: sometimes the pollen is carried by the winds; sometimes by insects.* Nature here, as elsewhere, is never at a loss for agents to perform her work.

There is a curious circumstance connected with insect impregnation showing great wisdom and design. When insects are employed or attracted by the honey or the pollen, which latter constitues the food of their young, as in the case of the honey bee, you never see them passing promiscuously from one flower of one species to another. If they commence on the white clover, they continue on it during the time they gather their load. This is undoubtedly to prevent improper hybridization and consequent sterility.

PRACTICAL REMARKS—HYBRIDIZATION, ETC.

We have seen that in the blossoms of fruit trees, and of most other plants, the seed is the offspring of the *Stamens* and *Pistil*, whatever be the theory or the mode of impregnation. It can not have escaped the attention of the most superficial observer, that the seed when ripe, will not renew precisely the species of the individual from which it was taken. We have often heard the silly remark, that there was one seed in every apple, or certain seed on every tree, that would be synonymous with that of the tree. But we would as soon believe the silly story of the man who declared to us he had a cherry without pit or stone, and when a large number of persons applied for buds and grafts, Lo! it was dead! Five thousand seed, and these augmented a hundred fold, might be planted from a single tree, and not one would prove a type of the original. What is to be done to secure a sure or better result? Crossing or *Hybridizing*.

This can be effected, and is now successfully effected as follows: Remove, for instance, out of the blossom of a fruit tree the stamens, or male parents, and bring those of another and different variety of fruit, and dust the pistil or female parent with them—a process sufficiently simple but one having the most marked effect on the seeds produced. If we thus fertilize the pistil of one variety

*But three or four years since (if I rightly remember), the pools of water at Cincinnati and vicinity, were covered with a yellow dust, which on examination with the microscope, was found to be the pollen of the pine. A south wind blowing for sometime, brought this pollen all the way from the pine region of the Alleganies.

of fruit by the pollen of another, we shall obtain a new variety partaking intermediately of the qualities of both parents. Thus among fruits we have Coe's Golden Drop Plum originating from the Green Gage, impregnated by the Magnum Bonum, or egg plum; and the Elton Cherry, from the Bigarrieu, impregnated by the White Heart. Thus we derive the conclusion, that if one species be fertilized by the pollen of another species, which may take place in the same germs; or if two distinct varieties of the same species be in like manner intermixed, the seeds which result from the operation will be intermediate between its parents, partaking of the qualities of both. In the first case, the progeny is literally hybrid or *mule*, in the second it is simply crossed. By the latter process seed, and consequently plants, may be improved; by the former sterility is often the result, or incapacity of yielding seed. Yet it is not settled in the vegetable, as in the animal kingdom, that all hybrids are absolutely sterile.

This power of improving varieties by crossing, is now very largely resorted to by gardeners throughout Europe, and to some extent in this country, though but little known to the mass of cultivators. Not only is this the case in fruit trees but in ornamental trees, shrubs and plants, and especially in florist's flowers it has been carried to a great length. The great number of new and beautiful Roses, Azaleas and Camellias, so splendid in color and perfect in form, owe their origin to careful crossing.

In the amelioration, and fertilizing of our fruits, it must prove by far the most certain and satisfactory process, and we hope it may be extended with scientific skill and attention to our grains, vegetables, etc. Thus if we have a very early and insipid sort of pear, and desire to raise from it a variety, both early and of fine flavor, we should fertilize some of its pistils, with the pollen of the best flavored variety, of a little later maturity. So of large and small, of sweet and sour, and thus by directing nature with the hand of science we can improve, for we have improved her operations—rendering her less promiscuous and more certain in her results. We are aware that we have not exhausted this most interesting subject; yet we are also fully aware that many a farmer will say: "what care I for these processes of nature, provided I can secure my hundred bushels of corn to the acre and get for it my 80 cts. per bushel." True, this is the main motive with most farmers, yet there is now and then one that feels his head was given him for something else beside the making

of money, and that he has a mind and a subject on which profitably to exercise it, as any other individual in the community, and that to him this knowledge will not be without its utility, even in a material point of view, so that while this may be subordinate, as it should be, he has a mind, which, if cultivated, would place him as high in the scale as any other class of society. True, how many farmers know that every grain on the shaft, or corn-cob, has a pistil or silk, and that the pollen of the tassel or flower placed over it, must fall upon every individual silk in order to the production of the kernal or grain, and that it is a critical time in the production of his crop if circumstances do not favor this process. So of other grains. Let him, if he choose, earth-worm like, plod on, zealous of the epitaph of his prototype—"*the hog.*"

"Be this my pleasure and my pride,
To show the world how fat I died."

Yet we trust that a higher ambition will influence many, not only to improve their fruits, but their minds, which last can alone impart true dignity to their noble profession.

We would be pleased to have all, who have any curiosity, to come and investigate with us, with the assistance of a superior microscope and other apparatus, this with other cognate subjects, and thereby in some measure assuage the passion of the age, to the gross materialization that is pre-occupying it.—Ed.

WHY ARE NOT FARMING AND FARM HOUSES MORE ATTRACTIVE?

Why is it, that while the occupation of cultivating the soil is almost universally acknowledged to be one of the most pleasant and healthful that man can engage in, yet the young gentleman who possesses, or fancies he possesses, a trifle more than the ordinary share of sense, is almost sure to seek in the profession of law, divinity or medicine, a wider scope for the exercise of his talents than he imagines can be found in the simple life of the farmer? more especially if he has been so fortunate as to obtain a better education than falls to the common lot.

Yet, in truth, agriculture is not a profession to be followed successfully by the ignorant few, but really requiring vastly more "head work" than is often used by ordinary pettifoggers or M. D.'s.

Are not these professions, then, so frequently chosen by the young and ambitious because the farm-life is too often associated with ideas of coarse manners, discomforts and bad taste? And is it not too often the case, that farmers—especially those of the West—though proverbially liberal in providing for the wants of the body, are too apt to neglect those of the mind?

Look at the majority of farm-houses in Wisconsin; how bare and comfortless within. Look at the front yard! A miry sty where odious swine root at will, and cattle spend their nights in undisturbed tranquility. No roses, or lilacs, shed their "perfume on the desert air"—no verdant grass dare creep over the filthy mire, for what were the use? It would soon be trodden to death by merciless hoofs.

Within doors there is often as great a dearth of books as of strawberries in December. Perhaps, if the good man is not totally opposed to "larnin'" of all kinds, he takes the county paper, but even this is too frequently condemned as a useless luxury.

Farmers, if you desire to attract to your ranks the ambitious, the educated and refined, see to it that while you provide for the wants of the body you neglect not those graces and refinements which help to distinguish man from the beast. Turn out those marauding cattle; fasten those in their proper sphere. Let the green grass come creeping around your door; plant fruit trees about your dwelling, and long before the first crop of fruit the birds among their branches will repay you with their songs.

Do not say that you are too poor to buy a few books and to take a newspaper or two. Throw away your tobacco, and if need be, tea and coffee, and spend the money they have cost in buying reading matter for yourself and family.

And you, good wife, pray take a little time to plant flowers, to gladden the hearts of your children with their brilliant perfumes.

So shall your homes become a green and flowery island in the rough sea of life, around which fond memorials shall cling when the hands that planted them are mouldering beneath the sod.—*Cor. Wis. Farmer.*

THE NARCOTICS—THEIR CHEMICAL CONSTITUENTS.

(CLASS ESSAY.)

PRE-EMINENT in the list of Narcotics, which are employed by man to soothe the nerves and intoxicate the brain, stands Tobacco.

It undoubtedly is in most general use throughout the world and is one of the least injurious to the system. It is grown in almost every part of theworld and seems to flourish equally as well in the Torrid Zone as in Temperate Zones. It was first found native in Tropical America and thence introduced into other countries. Its introduction was met by the opposition of the rulers of all nations where it made its appearance, and in some places even death was made the penalty of its use; but, like many other works of the Devil, it triumphed over all opposition, until it is now admitted into the very best of society. Its taste is nauseous in the extreme, and the eater of the filthy weed must undergo a severe seasoning before the habit becomes confirmed, but after it is once fastened the user would rather do away with his meat and drink, than be deprived of his quid or cigar. There are three different ways of using it, and some are such slaves to it that they consume it in all of its forms. The first and most common, is to burn it and inhale the smoke. This is certainly the least disgusting, but at the same time the most injurious of the methods, for, according to Johnston, "the vapors of the burning tobacco are more penetrating, and act more speedily than the juice of the leaf as it is chewed in the mouth, and, when indulged in to excess, brings on nausea, trembling, paralysis, torpor, and in some cases death." The second form of its use is, to chew it and thus extract the flavor from the leaf, and this is the most disgusting habit which a man can form.

Think a moment of man, made only a little lower than the angels, continually chewing a substance which, if he should accidentally swallow, would cause death in a very short time. No animal but the goat keeps man company in this filthy habit, and even it must be taught to use it. And added to its own qualities are those of the substances with which it is adulterated, such as the leaves of the beech, walnut, rhubarb, mosses, bran, sproutings of malt, beet root dregs, liquorice, terra japonica, rosin, yellow ochre, fuller's earth,

sand, saltpeter, common salt, sal ammoniac, etc. The third form, is snuff, forcing the user to make a dust hole of his nose, perverting to an abominable use, that which was given as an ornament to his face. It prevents the enjoyment of the sense of smell, by thickening the lining membrane of the nose, and also causes loss of appetite, often bringing on dyspepsia. The substance which imparts to tobacco its peculiar qualities is obtained by infusing the leaves in water made slightly sour by sulphuric acid, and distilling the infusion with lime.

A colorless, oily liquid comes over, which gives a basis reaction with test paper, and is known by the name of nicotina. It has a burning, long continuing, tobacco-like taste, and is but little inferior to prussic acid in its poisonous qualities. Another base exists in tobacco which is obtained by distilling the leaves in a retort. It is formed during the process of smoking, and is of so poisonous a nature that a single drop will occasion death in a very few minutes. The plant is very rich in inorganic salts, as may be seen by the quantity of ashes left after burning. It, therefore, requires a soil rich in salts of potassa, soda and lime, which explains why lands upon which it is cultivated so speedily deteriorate, unless very highly manured.

Opium stands next upon the list, being used by nearly four hundred millions of the human race.* It acts more directly upon the nerves, making its effect more plainly visible, and the habit of using is much more difficult to abandon than is the use of tobacco. Taken in moderate doses, it stimulates and excites the nerves so as to render both man and animal almost insensible to fatigue. FORBES says that "with a few dates or a lump of coarse bread, the Tartar couriers traverse the trackless desert, amidst privations and hardships which can only be supported under the influence of this drug." When indulged in merely for the sake of the excitement it produces, a larger dose is necessary. While under its influence, the most absurd fancies become realities; the tales of the genii and fairies are comparatively tame to the scenes through which the opium eater passes. By its means the follower of MAHOMET gains a foretaste of his sensual heaven, with its beautiful houri hovering around him. But these exciting influences are almost invariably followed by a corresponding depression of both mind and body. "A total

*Tobacco	is	used	by	800	Millions,
Opium	"	"	"	400	"
Hemp	"	"	200 to	300	"
Betel	"	"	"	100	
Cocas	"	"	"	10	"

attenuation of body," says OPPENHIM; "a withered, yellow countenance, a lame gait, a bending of the spine, and glassy, deep sunken eyes, betray the opium eater at the first glance. The usual form of taking it is to smoke it, and for this purpose a pipe, with its needles and lamp, is furnished at the bazaars where it is sold. It is also taken in the shape of small pills, or in a liquid form, as in laudanum. The approximate chemical constituents are morphine, narcotina, codrine, narceine, thebaina, opianine, meconine, pseudo-morphine, porphyroxina, papaverine and meconic acid, besides the well-known substances, such as gum, resin, fat, caoutchouc, volatile oil, etc. Of its peculiar components morphine is the best known and is frequently used in medicine.

The extract of Hemp comes next under notice. It is a greenish-colored resin contained in the hemp plant, which, in warm countries, is found upon the leaves and stalks as a natural exudation. It is known among the eastern nations under the name of haschisch. To produce the required effect, it is either smoked or chewed, and produces in some, great mental cheerfulness, and others it incites to deeds most terrible, rendering them at the same time totally regardless of all consequences ensuing to themselves. Taken in excess, it causes catalepsy, that most extraordinary of all nervous conditions, as well as the most unaccountable. When under its influence, minutes seem hours, and hours lengthen into ages; the slightest sound becomes thunder to the ear and ordinary noises are like the uninterrupted roll of artillery, and during the whole time the mind experiences the most pleasurable sensation. MOREAU says: "it is really happiness which is produced by the haschisch, and an enjoymententirely moral." Its approximate or ultimate elements are not known, but from its action we may judge that, like opium, it is very complex in its composition. The analysis of it would, no doubt, be attended with interesting results, and it offers to the chemist the promise of a rich harvest.

The Betel-nut claims notice next. It is the fruit of a Palm tree, known to botanists by the name of the "Areca catechu." In order to prepare it for consumption, the nut is cut into strips and rolled up in the leaves of the betel pepper, previously dusted on one side with the quick lime of calcined shells. It is powerfully astringent, and the lime generally removes the skin from the mouth, when first used. Upon the inhabitants of India it seems to exert a healthful influence, counteracting the fevers bred by their miserable

diet and the miasma arising from the marshy country. It is also used to rouse persons who are under the influence of opium, just as tea restores a person when ,under the influence of spirituous liquors. The only knowledge which we have of it, is an extract of the nut, called catechu, better known under the name of Terra Japonica. It is strongly astringent, yielding more tannic acid than any other known substance, and to this is to be ascribed its good effects upon the system in those warm climates. But besides this, there are some undiscovered narcotic ingredients which imparts to it its intoxicating qualities.

We now consider the Cocas, which in its effects is, as yet, an enigma to chemists. It is used chiefly in Bolivia and Perú, and forms an important crop to the cultivators of the soil. Its use has been handed down from generation to generation, until its origin is lost in the remote ages of antiquity. It is as indispensable to the Indians of the countries mentioned as bread is to us. The times of its enjoyment are fixed as regularly as are his meals, and when under its influence he is absolutely immovable; no persuasion or entreaty, no danger, not the thunder storm which threatens to drown him, not the appearance of wild beasts, nor fire threatening to consume him in his retreat, is capable of arousing him from his apathy. The user of the leaf becomes gloomy and silent, often retiring for days together to the woods, there to indulge his unconquerable desire for it to an unlimited extent. It resembles opium more nearly than any other of the narcotics, both in the desire for solitude which it produces, and the power it gives of enduring fatigue for an extraordinary length of time; it enables the Indian to live almost without food for days together. This, however, is an exaggeration; its effect is to enable the body to feed upon itself, for a greater length of time, without the hunger pains and weakness which usually accompany a prolonged abstinence from food. The chemistry of the leaf is still obscure, as is that of most of the narcotics in general use throughout the world. We must be content to remain in ignorance, until at some future time they shall be made to disclose their secrets to the search of science.

We have now reached the end of the catalogue of the principal narcotics in use, but many others there are, all of which exert an influence peculiar to themselves and are more or less employed by man. Of these are the root of the Ava pepper, the seeds of a species of Cardamuns, grown in Guinea and upon the African coast

better known, perhaps, as grains of paradise; the seeds of the red thorn apple used by the Indians of the Andes, and all the seeds of the common thorn apple, often employed to adulterate beer, the active ingredient of which is a colorless, crystaline substance, having a basic reaction upon test paper, and exceedingly poisonous, to which the name of Daturin has been given.

Even in the icy regions of Siberia the inhabitants find a means with which to gratify this universal craving for narcotic stimulants, in a fungus, resembling our common mushroom in appearance, and called by botanists the Amanita Muscaria. The effects upon the system greatly resemble those of exhilarating gas. Under its influence a person can not restrain himself from performing the most ludicrous antics; all secrets are brought to light, and small impediments in the pathway seem almost insurmountable. It also possesses the remarkable property of transmitting its intoxicating qualities to the fluid excretions, and it is common for the people to save the urine upon which they will again become intoxicated, and in this way its effects may be propagated through five or six individuals. The emetic Holly is used by the Indians of Florida to give clearness to the mind before deciding upon any important question, but the precise nature of its effects are not known. Other plants possessing narcotic qualities are used in medicine, but not as common stimulants; such as belladonna, common henbane, and others. The effects of all the narcotics are owing to some peculiar ingredient which they contain, and in those analyzed, the active component has been found to be very poisonous and to possess the properties of bases. The vegetable world affords to the chemist an infinitely extended field for the prosecution of his discoveries and as we see more and more of the manifold wonders of nature, our thoughts are naturally led from the creature up to the CREATOR who, in his infinite wisdom. called them all into existence. J. G. TAYLOR.

CULTIVATING A RAILROAD.—The Auburn (N. Y.) American says that "miles and scores of miles, within the fenced track of the Central Railroad, are planted with potatoes by the employees of that great road." These "railroad farms" are attended to mostly by the wives of the employees.

GOOD IN ALL THINGS.

We know not the eternal purposes of God. We look at the immediate and transient result, not at the ultimate and permanent. Thus the mariner can not come to port by reason of the storm and rocks which obstruct his course; he thinks the weather imperfect, the world not well made—and you often hear men say: "How beautiful the world would be if there were no storms, no hurricanes, no thunder and lightning." While if we could overlook the cosmic forces which make up the material world, we should see that every storm and every rock was needful; and the world would not be perfect and accomplish its function had not each been just in its proper time and place. An oak tree in the woods appears quite imperfect; the leaves are coiled up and spoiled by the leaf-roller; cut to pieces by the tailor-beetle; eaten by the hag-mouth and the polyhemus, the slug caterpillar and her numerous kindred; the twigs are sucked by the white-lined tree-hopper, or cut off by the oak-pruner; the horn-bug, the curculio and the timber-beetle eat up its wood; the gad-fly punctures leaf and bark, converting the forces of the tree to that insect's use; the grub lives in the young acorn; fly-catchers are on its leaves; a spider weaves his web from twig to twig; caterpillars of various denominations gnaw its tender shoots; the creeper and the wood-pecker bore through the bark; squirrels—striped, flying, red and gray—have gnawed into its limbs and made their nests; the toad has a hole in a flaw of its base; the fox has cut asunder its fibrous root in digging his burrow; the bear dwells in its trunk, which worms, emmets, bees and countless insects have helped to hollow; ice and the winds of winter have broken off full many a bough. How inperfect and incomplete the oak tree looks, so broken, crooked, cragged, gnarled and grim! The carpenter can not get a beam, the millwright a shaft, or the ship-builder a solid knee for his purpose; even the common woodman spares that tree as not worth felling; it only cumbers the ground. But it has served its complicated purpose, given board and lodging for all these creatures, from the ephemeral fly, joying in his transient summer, to the brawny bear for many a winter hibernating in its trunk. It has been a great woodland caravansary, even a tavern and a chateau, to all that heterogenous swarm; and yet no man but a painter thinks

it a perfect tree—and he only because the picturesque thing serves his special purpose—no doubt the good GOD is quite contented with his oak, and says: "Well done, good and faithful servant." He designed it to serve these manifold uses, and furnish beauty for the painter's picture and meaning for the preacher's speech. Doubtless it enters into the joy of its Lord, having completely served His purpose. He wanted a caravansary and chateau for those uncounted citizens. To judge of it we must look at all these ends, and also at the condition of the soil that had a superabundance of the matter whereof oak-trees are made.

We generally look on the world as the carpenter and millwright on that crooked oak, and because it does not serve our turn completely we think it an imperfect world. Thus men grumble at the rocky shores of New England, its sterile soil, its winters long and hard, its cold and biting springs, its summers brief and burning, and seems to think the world is badly put together. They complain of wild beasts in the forest, of monsters in the sea, of toads and snakes, vipers and many a loathsome thing, hideous to our imperfect eye. How little do we know! a world without an alligator or a rattlesnake, a hyena or a shark, would doubtless be a very imperfect world. The good GOD has something for each of these to do; a place for them all at his table, and a pillow for every one of them in Nature's bed.—*Parker.*

THE OWNER OF THE SOIL.

THE man who stands upon his own soil, who feels that by the laws of the land in which he lives—by the law of civilized nations—he is the rightful and exclusive owner of the land he tills, is by the constitution of our nature under a wholesome influence not easily imbued by any other source. He feels, other things being equal, more strongly than another the character of a man as the lord of an inanimate world. Of this great and wonderful sphere which, fashioned by the hand of GOD, and upheld by his power, is rolling through the heavens, a part is his—his from the center to the sky; it is the space on which the generation before moved in its round of

duties, and he feels himself connected by a link with those who follow him, to whom he is to transmit a home. Perhaps a farm has come down to him from his fathers; they have gone to their long home! but he can trace their footsteps over the scenes of his daily labors; the roof which shelters him was reared by those to whom he owes his being; some interesting domestic tradition is connected with every enclosure; the favorite fruit tree was planted by his father's hand. He sported in boyhood beside the brook which still winds through the meadow; through the field lies the path to the village school of earlier days; he still hears from the window the voice of the Sabbath bell which called his father to the house of God; and near at hand is the spot where his parents laid down to rest, and where, when his time has come, he shall be laid by his children. These are the feelings of the owner of the soil—words can not paint them; they flow out of the deepest fountains of the heart; they are the life-spring of a fresh, healthy and generous national character.—*E. Everett.*

(Communicated.)

COLLEGE HILL COMMENCEMENT.

Mr. Ed :—Having been present during the annual literary festival of the two Colleges—I trust the twain are one in aim and object—permit me, through the Cincinnatus, to give a hasty sketch of my impressions of their exercises, especially on the first instant.

The services were held in the Presbyterian Church. On entering the house at the time appointed, it was gratifying to see so large an audience gathered from remote points over the great West. Those composing the assemblage were of almost every age and every calling in society. Here were Students from both Seminaries, with faces beaming with intelligence, indicating high hopes and brilliant imaginings of the future. It is a cheering sight—we remember when ourselves were there, "just twenty years ago;" other scenes may fade from our memories, but these never. Here were parents who, like ourselves, had come hither, it may be, for the first time on the like occasion. The antithesis was pleasing though calculated to

awaken serious emotions and thoughtful forecastings in minds better schooled in the experiences of life and life's sober realities. While the countenance of the one was all redolent with summer sunshine, the other was not devoid of smiles of parental satisfaction; still, they were half hidden by shadows of anxiety about that undeveloped future towards which their sons and daughters are advancing with the rapidity of time. Here were the Alumni, who had come up from their various fields of labor, to unbend the mind and "drive dull care away," and stroll an hour or so beneath the shadows of the old College walls. Here there is a discount, a draw-back; that Alumnus does not find things just what he expected, or as he expected. He thought, or rather dreamed, as he entered the sacred enclosure, the airy groves, and hill sides, and inner walls of the great temple would echo his bold tread and free voice as in times of yore. But alas, for the fearless treadings and free voices—his movements are more timid and thoughtful than those of the stranger. He is really in suspense whether he ever did dwell and reign there, and if so, how and by what strange method have their present occupants got possession.

Kind reader, this may be mere sentiment, without meaning in your estimate—not so in ours. Deferring to your judgement we will pass along. In this assemblage were those from the immediate vicinity interested in all things pertaining to the present and future weal of these Colleges; and just now perhaps *more* interested to hear and to see, that they may the better judge of the abilities of the incoming President, and the wisdom of those calling him to the Presidency of "FARMERS' COLLEGE," into which office he is soon to be inducted and solemnly invested with the symbols of prerogative pertaining thereto. Such were some of our reflections on entering that new and beautiful edifice, approximating in the interior our "beau ideal" of what a home to worship the Invisible GOD in should be. It reflects great honor on both the architect and the artificers.

At this point the speakers, accompanied by the Board of Trustees and other professional gentlemen, entered the house, and moved up the middle aisle; the former, together with the retiring President and Pastor, ascended the Rostrum. The Rev. Mr. JAMISON addressed the throne of grace in prayer. It was an appropriate petition, because of its adaptation to the occasion, and a prayer to Heaven rather than an oration to the people assembled.

Mr. F. G. CARY then announced the fact of Mr. MATTOONS election by the unanimous suffrages of the Board, and proceeded to welcome his successor to his new position in a brief and comprehensive speech, every sentence of which was full of meaning. There was a depth of feeling and seriousness of manner that made a solemn impression upon the entire assembly, and furnished a good salutatory for all the after exercises. The keys of the College were then given into the hands of Mr. MATTOON, who was proclaimed President of "Farmers' College," and duly invested with all the rights and privileges pertaining to that office. Then followed the Inaugural address. After some preliminary remarks, the speaker announced his theme.

APPRECIATION—ITS CULTIVATION AND BLESSING.

He defined Appreciation, the perception and enjoyment of the beautiful and sublime, the good and truthful in every department of knowledge where it is proper for finite mind to carry its investigations. It was assumed, not as a matter problematical, but of experience, that this sense of appreciation is as universal as the speaking tongue is found; but greatly modified in the degrees of its manifestations. In this particular men differ, as in temperaments, sensibilities and judgment. Some are more emotional than others, more imaginative, with less depth of understanding and power of will to control the passions and hold in check the wayward fancy. Hence arises the necessity, would we cultivate the *appreciative sense*, of educating the whole man. The reasons for this were made very plain, and we can but cherish the hope these reasons were comprehended and indorsed.

Instead of decrying the imagination, and leading his hearers to look with suspicion upon every production in which this ethereal faculty has inwoven a flower, though it be no more than a modest violet, he gave it a high place—its own place in the empire of mind. Thoughts upon this point, though incidentally thrown in, were timely, truthful, morally forceful.

But for the highest attainable perfection of the appreciative sense, it was contended that students must go back to the days when prophets and kings were poets, divinely inspired, and Homer tuned his world entrancing harp. In other words, they must study on classic soil and learn to hold converse with the spirits of the mighty dead, "who yet speak." And this not for the sake of cultivating memory, or copying forms, but imbibing the very spirit

that created forms. To fortify this position, the golden age of English literature was thoroughly scanned to find out by what process of mental culture these English scholars were enabled to elaborate and give embodiment to thoughts that have constitued the *theme texts* from that day to this. It was found, with scarcely an exception, that they were thoroughly versed in Grecian and Roman literatûre. But if the scholar can not go back to their original points, let him become familiar with the genius of the 17th century; with the MILTONS, SHAKSPEARS, HOWES and HOOKERS—"the Patriot Saints in literature and religion." But if this can not be done study our own literature—study the Bible—study nature; to do this latter you need not go abroad for inspiration; we have the material for the chipping out of a literature as original and unique as ever fell to the lot of any other people under Heaven. In whose mind slumbers the *beau ideal* of the *thing*—and who is the artificer of adequate bone and muscle to block it out? Another leading thought was this—to attain rewards of appreciation the mind must go beyond the outward form of things—the seen—the shadow; and hold communion with the unseen—the substance; the one "temporal," the other "eternal."

The address to the Board of Trustees, near the close, was dignified and manly, at the same time with marked respect for that remarkable body. The whole was pervaded with the spirit of Christianity. It antedated a Christian age, when religion and the arts shall be joined in bands of holy wedlock, and the products of the union shall be such models of beauty as no age has yet projected.

This meagre sketch does no justice to the speaker or the address. We have no desire to eulogize either—it is not our aim; it would be an offence to the good sense of any Christian scholar. It was an admirable feature of the address that the speaker lost himself in his subject—there was no assumption of wisdom—not one word of self-adulation, or what he could do, or would do, as though his predecessors had left anything undone that his superior wisdom was to rectify. The only allusion made to himself was, that he entered upon his duties with profound diffidence in his own abilities and a deep felt necessity of the cordial support of his associates in the Faculty, in the Board and the community, and above all, His support in whose hands are the destinies of all men.

The reference to the founders of this College, and those who had filled with marked ability the chair he was soon to occupy—some

having fallen on the very field of battle, but only to find an honorable grave—was affecting as it was brief. But we have dwelt thus long because of the interests involved in this near relation.

We believe, all things considered, you have been directed, as a Board of Trustees, in the choice of the right man—a man to whose tuition and government parents and guardians may commit their sons in full confidence that they will be taught, not only the principles of science, but how to think; how to govern themselves; how to become good; how great; and how dignified, in the only true sense of that term.

We designed to speak of the very able and finely written address of HENRY WOODRUFF, Esq., of Jainsville, Wis., before the Alumni, at the Commencement of the Ohio Female College, on the following day. The Floral Festival and the supurb entertainment, by Mrs. F. G. CARY to a large number of invited guests, was a bountiful and beautiful Banquet of good things—such honey—such creams—such strawberries—not imported! Let who else will complain that justice has not been done them in their efforts to please, it will not be our hostess of the evening of the first of July, 1857.

With large experience, the prestige of past success, and an able chair of Instructors, we can but predict prosperity to FARMERS' COLLEGE.

WHITE PIRK WHEAT.

THIS wheat, though the finest grained and quite as productive as any other, is not yet extensively disseminated throughout the country. It should be in the possession of all our farmers. It is our purpose to secure a quantity at the earliest period for distribution. MR. ELLE'S "Modern Husbandman," published in London, 1742, records several sorts of wheat bearing this appellation.

The right sort was called "Aylesbury Pirk." This wheat was sown in chalky, gravelly or dry loams; though it will succeed well on all of our wheat growing soils and even on land well worn.

Its chaff is light, kernels compact on the rachis, head short, bald;

the straw white and strong, not liable to fall. It is similar in appearance to the variety obtained from the Patent Office under the name of Prince Albert wheat.

It will yield as well as any other wheat grown and has been known to weigh 72 lbs. to the measured bushel, and yield 44 lbs. of flour to the standard bushel; and it is certainly a premiun flour in appearance and fact, having a rich and cream like color, and will bring fifty cents per barrel more than any flour in the market. ED.

BFNEFIT OF "HARD TIMES."

THE last year was for this country a year of decided scarsity. Prices were high and in many parts of our country the comforts, not to say luxuries, were not abundant even for money.

The effect of this state of things has been and will continue to be decidedly advantageous. Greater attention will be given to agricultural pursuits.

The fertile uncultivated lands with which portions of our country abound and which have been neglected, will now be tilled. Any observer must now see this economy manifested in the cultivation of many a fence corner formerly filled with briars and weeds, and waste strips once covered with logs and rubbish now carefully tilled. Besides an air of neatness and thrift is now marked where formerly great slovenliness and carelessness were prevalent. The consequence will be that the life of the farmer will present far more attractions and more solid and substantial comforts than the multitude have been willing to concede. Too many have, of late, left its quiet and healthful pursuits to crowd into the already overcrowded cities; forsaking, with most perverted tastes, the green fields and shady groves, and salubrious atmosphere of the country for the dust and noise, and confined air that is found in streets and alleys.

From the scarsity that has prevailed, combined with other causes, attention will now be more strongly turned to the cultivation of the soil, and as a consequence provisions of every kind will be more abundant and cheaper. It is high time the current should set the

other way, and if the dearth under which the whole country has temporarily suffered has the tendency to direct labor into its more appropriate channels, we may find that even this affliction has not been without its advantage. The prospect now is that more abundant crops will be realized than ever before in this country; this result will be experienced, not only from the reasons above given, but from the earth's comparative rest for a number of years past, and the great drouth bringing a larger quantity of the fertilizing salts to the surface; such crops of grain and vegetables and fruits must rejoice the heart of the husbandman and fill the land with plenty. It is to be hoped that it may awaken gratitude to the Great Giver and make the receiver better. ED.

THE EIGHTH ANNUAL STATE FAIR OF OHIO.

SEPT. 15—18, 1857.

THE time appointed for the Eighth Annual Agricultural and Industrial Exhibition of the State Agricultural Society of Ohio is gradually drawing nigh. Already a goodly number of workmen are busily engaged in fitting up the grounds and in erecting commodious halls, which are to receive the bountiful productions of our soil and the rare fruits of the genius and skill of our enterprising mechanics—the most convincing testimonials of our advancing prosperity and glory.

The steadily increasing interest taken by the people of Ohio in these exhibitions, the happy location of the fair grounds on a most beautiful site in near proximity to the great commercial emporium of the West, and above all the flattering prospect of abundant crops with which Providence is likely to crown the year, give a sure promise that the coming State Fair will triumphantly surpass all the other similar exhibitions hitherto had and will give additional luster and dignity to the laborious citizens of our great State.

Arrangements for the accommodation of live stock are made on a more extensive scale than at any previous Fair. Over 700 stalls for horses, cattle, sheep and swine, as well as the necessary accommoda-

tion for poultry, are in rapid course of erection; encircling a space of near forty acres of beautiful meadow ground, diversified by a meandering brook and shady grove, on whose margin a giant fountain will raise a column of water to the height of some eighty feet.

Three halls of huge proportions are now in process of erection for domestic manufacturers, farm implements and the products of the work shop and manufactory.

In another direction the shrill whistle and the hoarse noise of the steam engine will invite the curious to witness the high perfection to which machinery has been carried in our State, and with full confidence may we look for a noble demonstration in Power Hall that will challenge the world for an equal.

Farm and dairy products will occupy one of the large tents, owned by the Secretary, whilst in the other the fruits of the orchard will be arranged. Here, we trust, sights will arrest the admiring gaze in the fruits exhibited, filling the heart with gladness.

Last, though not least, we would invite attention to the higher artistic department, and to the poetry of agriculture—to horticulture, especially to Flora. Fine Arts' Hall is a commodious structure covered with glass; its pictures and statuary will exhibit our appreciation of the refined and beautiful in despite of our reputation for being a beef and corn loving people.

Every effort will be made to make Floral Hall attractive by its tasteful design and decorations, as well as by its floral wealth. It is to be hoped that the Horticulturists of Ohio, and especially those of Cincinnati and vicinity, "*will do all in their power*" to render this department worthy their high reputation.

The Board has offered as usual a liberal premium list, and selected as committees on premiums men of experience and ability. The high standing of the gentlemen composing the Ohio State Board of Agriculture, to whose hands are entrusted these great agricultural interests of our State, is at once an earnest and a sure guarantee of the successful result of this great annual festival of our citizens. Every one interested in the welfare and fame of our noble State should exert himself to make this great coming reunion of our citizens the best and most brilliant ever held within the bounds of our boasted Republic; and may a brilliant sun, with general health and prosperity light up with smiles this great harvest home gathering of free intelligent laborers during these festal days. ED.

CORRESPONDENCE OF THE CINCINNATUS.

BY A TRAVELING AGENT.

A RAILROAD of five miles connects Louisville with Portland, at the outlet of the ship canal by which the Falls of the Ohio are overcome. Here you cross by ferry to

NEW ALBANY, IND.

This is one of the most populous and flourishing cities in the Hoosier State. It is fast assuming importance as a grand agricultural entrepot. There are three immense flouring mills here, and besides furnishing them with the staple of the country to grind up for home consumption and shipment, a very large amount of wheat is shipped to other and distant mills.

The latest improvements in agricultural implements are manufactured and sold here. The Messrs. DAMRON, WARREN & Co., proprietors of the Northwestern Agricultural Works, situated on Pearl, between Spring and Elm streets, are manufacturers of many leading articles and keep on hand all the labor-saving machines used by the farmer. This enterprising firm are shipping off by steamboat and railroad large quantities of farming tools and implements every season. Besides this firm there are others in the city doing a good business; one, a Mr. H. BEHARREL, on Market street, who takes a deep interest in our College Hill operations. The mere erection of the extensive Agricultural Works and their support shows an appreciation in the right quarter, and the advancement of science among farmers.

Every other morning of each week the Albany markets are crowded with vegetables and fruits in their season, as much so as the city of Louisville, and the gardens where they are raised are in the immediate vicinity.

Commencing just below the town and running down the river some nine miles, is one

IMMENSE POTATOE PATCH.

The land so occupied has been measurably reclaimed from a former skimming process, by the introduction of a small colony of English gardeners, till now all this " bottom," so appropriated, has come to be held at $300 per acre. It ranges from one to two miles

in breadth, and in times of the highest floods, like that of 1842, has been subject to overflow, but invariably benefitted by the sediment left behind. This goes to prove the benefits always resulting from irrigation and liquid manure. It is frequently the case that during the months of July and August from one to three boats are engaged at the farm-landing receiving from 1000 to 3000 barrels of potatoes a week, for the down-river trade. In 1855 eighteen hundred barrels of potatoes were grown on eighteen acres of ground, which were all shipped by the owner to the New Orleans market and sold at the highest prices. Every barrel has the brand of the grower upon it, and those usually raised are of the best quality of meshannock. The yield this season, though about two weeks later than usual, it is believed will exceed all previous ones.

The question is asked, why is it that after taking off a crop of potatoes, and putting in cabbage-plants into the same ground directly, the soil is always found in a better condition for the next crop? Is it from the protection the shade of the cabbage-leaf gives, or from the roots drawing vitality from the sub-soil and depositing it upon the surface, or is it from the atmosphere? The best gardeners here are in the habit of raising four crops of some kinds of vegetables off the same land in one season, and instead of wearing out, it actually improves by careful attention and proper cultivation.

FARM OF T. H. COLLINS, ESQ.

This lies about two miles below New Albany. Previous to his coming in possession of it about eight years ago, the "place" was nearly ruined, and hardly paid for the labor bestowed upon it. As a truly scientific and enterprising man he immediately turned up the soil to the depth of a foot or more. Thus introduced to sun and air it never had come in contact with before from mere surface plowing, the result was an increase of 100 per cent. in yield. So, too, his land in the rear, hitherto submerged in water, is redeemed, disenthralled and made the most profitable. How? By a systematic draining process. True, three miles of land drain cost him $4000; but the many acres of arable land he gets for it returns him a profit of four-fold, and that which was formerly "too wet even for the wild grasses to flourish on, is now the most valuable and productive portion of the farm." Mr. C. has seven main drains with cross drains leading into them at distances of every 50 feet, and as a substitute for drain tile machines has used the slate rock, found in the border

of the river hard by; a cheap drain tile machine however, would be preferable. Mr. C.'s manner of

MANUFACTURING MANURE

is also worthy of remark. "Near his barn and stables an excavation has been made, perhaps 100 feet square. Into this all the weeds, vines, stalks and old straw—indeed everything of vegetable material grown upon the farm that can be readily gathered, is thrown into this place, with which all the manure from the stables is incorporated. By drains all the slops from the kitchen are conveyed to this place of deposit. When an excess of water from protracted rains accumulate, it is conveyed to the meadow through under drains, which is found to be a most efficient and powerful method of manuring."

This gentleman makes a right improvement, also, of the various agricultural implements, of which he has a number. He is the inventor of a roller used in the cultivation of potatoes, with three sections, which will roll three rows at a time; a simple machine of intrinsic value, to be had with little cost. The culture of fruits on this farm and vicinity are beginning to receive more attention. Those now cultivated are principally peaches, strawberries and tomatoes. These are preserved in air-tight cans and sold to the river boats.

An Agricultural Society for the county has lately been organized, and Mr. COLLINS is the President. Indeed, among all the farmers I visited there were none but what are interested in and putting forth exertions for an advance in agriculture in their midst. In the neighborhood of Bridgeport, nine miles below N. A., there are the Messrs. FARNSLEY and others paying marked attention to progressive science in these regards and are worthy of much praise for their disinterested endeavors.

CLARK COUNTY, IND.,

adjoining Floyd and Harrison counties below it, also a river county, is, as a certain friendly farmer informed me, "as rich as cream;" that is to say the land generally, what I saw of it, has a rich, creamy appearance and the owners themselves are wealthy. A few years more will bring out their resources, and with other counties in the State more fully developed they will be able to compete, and possibly from the strength of their soil get in advance of them.

July 21, 1857. W. H. O.

FARMERS, GIVE US YOUR EXPERIENCE.

THERE is a vast fund of useful, practical information on all the various subjects pertinent to agriculture and horticulture all around us; and in possession too of those who are intelligent and well able to impart their knowledge. Many of these persons in conversation or by letter to a friend communicate freely, but they will not for the press. Why so? It is not expected by farmers that farmers will or can write in a fine, poetical style; nor is it expected to be at all necessary. Their subjects are every-day ones, and all we ask is for them to give views on experience in every-day language.

As a farmer we have written, not with a view of seeing our name in print, or from vanity, but that the experience and deductions therefrom, or from reading, might aid some one. Let the practice and knowledge of farmers be once common property, where will our improvement cease? Let every one try to do something and will not our standing be elevated? One farmer believes he can and does manage his corn crop better than his neighbors; another knows he cultivates his wheat, cotton or tobacco on a better plan, and so on through the whole catalogue of our products; yet these very individuals are either so indifferent to the improvement of the country, or so fearful that they will not be considered bright, that they hold their knowledge as they would dollars. This, farmers, is wrong. Write out your experience in your own plain way, so you will clearly understand yourself, and you will be better satisfied with yourselves and others. Knowledge should be public property, and especially the kind of knowledge all farmers need. We can not in a long series of years arrive at just and proper conclusions by ourselves, but if united it would be electrical. While one is devoting himself to any particular vegetable product, or breed of animals, another is at something else; and by exchanging knowledge, as it may be exchanged rapidly in these days, every one becomes speedily the possessor of all the required information. Should any one by a series of experiments, or from reasoning, have gotten into an error he will thus be corrected, and should he be right his assurance is made doubly sure, and a certain benefit is the result. Now, one chief design of our farm department is to experiment on various crops, fruits, etc.; and

while we are engaged in doing this we would be pleased if our farmers would throw aside their delicacy and give us their experience on wheat culture, mode of cultivation, results; your fruits that succeed best, mode of culture, kind of soil, etc. Horticulturists, in relation to fruits, flowers, shrubbery, etc., you can not fail to lend your ray of light, and thus by an accumulation of facts better enable us to arrive at truth.

We have much to learn on this most profound of sciences, and it is thus by uniting theory and practice we may hope to arrive at some sure conclusions.

Should wheat be placed within a quarter of an inch of the surface, or as directed by our works, to the depth of from three to six inches, or according to some more recent theorists, to the depth of from one to two inches? Will not one bushel sowed at the former depth be of more avail, produce more than two sowed to the depth of three inches or more?

Which is your best wheat? Give us your products. The White Pirk we are persuaded is the best of forty-six kinds upon which we have been experimenting. We will be able in our next to give some facts and statistics. ED.

THE SCIENCE OF BREEDING.

IT is notorious that the English have excelled all the rest of the world in improving domestic animals. The whole secret consists in understanding a few principles. Mr. BAKEWELL, the greatest improver of sheep, was unwilling to his death to favor his countrymen with the least information on his system of breeding, and therefore most sheep growers have concluded that he made important discoveries with which others were not acquainted; but this is far from being the fact. BAKEWELL evidently adopted the rule of crossing to remedy defects. If a sheep, for instance, was too light in the hind quarters, he bred it with one that was good in that particular; if the chest was not right in one, he attempted to correct the deficiency by the first cross. His sheep were not so large as others, but they were

of quick growth and fattened readily. The COLLINGS were men of fine discernment, and spent most of their lives in producing a race of cattle of perfect form. The story is well known of one of the COLLINGS' selecting and purchasing a calf that pleased him, from its fine symmetry, and which laid the foundation of his celebrated Durhams. There are a few highly gifted gentlemen in England who are carrying out the principles of the COLLINGS and who are destined to be England's best breeders. The draught horse has been the product of science. Animals of great bone and muscular power were selected as breeders, and at every cross improvement was the result.

The fine race horse is also made by crossing with judgment. In this country it is not supposed that more than one colt in forty, from the best race horses, makes a good runner. An old breeder said the other day, that "if a man in his lifetime was so fortunate as to raise one good racer he did well." What is the reason that more of the mares put to good horses do not bring colts equal to their sires? It is because there is but little judgment in breeding. If a strange horse comes into the country with "flaming" certificates, the people conclude he is the animal for every shaped mare; and the experiment terminates in disappointment. A breeder may have a mare good in all her points, except the leg is a little too long and the loin a little too narrow, and if he puts her to a horse with the same defects in all probability the offspring will be worse in these points than either dam or sire. A mare put to a horse whose good points will correct her bad ones in the offspring, may bring a fine animal; while if she were put to a horse possessing her own ill shaped parts the progeny would be obliged to be indifferent.

So much is done by mere "accident" (if there is any such thing), in this country, that we can but repeatedly call the attention of the farmers to the subject of improving domestic animals. At a future period we will endeavor to give a few short rules for crossing different stock, which will be very useful to adhere to. But for the present we urge upon the consideration of the agriculturist the importance of providing good pastures, constant supplies of fresh water and comfortable housing for their animals in bad weather. Good keeping and scientific breeding will perform wonders.

We would urge upon every stock raiser the above considerations. If they were carefully observed we should soon witness most desirable results in this important department. ED.

AGRICULTURAL COLLEGE AT LANSING, MICHIGAN.

THROUGH the politeness of the President of Michigan Agricultural College, Mr. JOSEPH R. WILLIAMS, we have been favored with a pamphlet containing the names of faculty, students, act of organization, dedicatory address, etc., of this new institution, located in the vicinity of Lansing.

As the establishment of such an Institution under the auspices of State patronage and by direct Constitutional provision is a new step in the march of progress it becomes us to give it prominence. And the question may well be asked, why a measure that must commend itself to every thinking man as one so consonant with the soundest State policy, has so long been without precedent? Not certainly because there was no demand for it, nor yet because it has not been urged before our State Legislatures and before Congress, but simply because our Farmers as a class have been too modest to make the requisition. The State of Michigan has set the older States a noble example.

HER CONSTITUTIONAL PROVISION.

SEC. 11.—"The Legislature shall encourage the promotion of intellectual, scientific and agricultural improvement; and shall as soon as practicable provide for the establishment of an Agricultural College. The Legislature may appropriate the twenty-two sections of Salt Spring lands, now unappropriated, or the money arising from the sale of the same where such lands have been already sold, and any land which may hereafter be granted or appropriated for such purpose, for the support and maintenance of such schools, and make the same a branch of the University for instruction in Agriculture and the Natural Sciences connected therewith, and place the same under the supervision of the regents of the University."

To carry out the foregoing provision of the Constitution at the session of 1855 the Legislature passed an act for the establishment of a State Agricultural College, making appropriation of the before named mineral lands, or the money arising from their sale, for the purpose of securing a site and lands suitable for such Institution, the erection of buildings, purchase of furniture, apparatus, library and implements, payment of professors and teachers, and other

necessary expenses to be incurred in the etablishment and successful operation of said Institution. This act provides for said Institution a liberal curiculum of studies, embracing a full and extensive course of science for those who may avail themselves of its provisions. At the last session of the Legislature they made further provision for sustaining the Institution during the next two years by the liberal appropriation of forty thousand dollars out of the State Treasury.

A corps of professors having been elected, and the Institution being prepared for the reception of students, it was dedicated by the Board of Education to the purposes designed, with appropriate services, on the 13th of May, 1857, in the presence of the Governor and other State officers, amidst a large concourse of citizens from all parts of the State

This is certainly commendable and furnishes evidence that the people are beginning to look to their own true interests. Such interest on the part of the Governor and other distinguished State officers, in behalf of the liberal education of that great and hitherto neglected class for his life work, is certainly worthy of our highest approbation as it exhibits in such striking contrast the policy pursued by our own State, and many of the older States, and it behooves us to hold it up as a prominent example and one worthy their imitation. In the policy pursued on this subject hitherto, there has been no recognition of the great and important truth that agriculture is one of the profoundest of sciences, or that those employed in it need any other education than to fit them to dig and delve, as the serf in the mine.

Thus, by a kind of traditionary neglect and prejudice four-fifths of our race, on whose sweat and toil all subsist, have been doomed to ignorance as unworthy of mental cultivation. But we are led to hope that a brighter day is dawning; and we welcome to our ranks this young and promising co-laborer in the cause of agricultural science and sound scientific attainments. For years we have plead the cause of such Institutions; we have endeavored to demonstrate their necessity, and to the extent of our ability have labored for their upbuilding. Farmers' College, though strangely ignored in certain directions, claims to be a pioneer in the great work. Her history dates back when not an Institution of the kind was to be found in our broad land; and the doctrines she then promulged are the same as those now so eloquently held forth by the President

of this new Agricultural College. While we would not pluck a laurel from the brow of the President or the State that thus lays claim to the establishment of the "pioneer Agricultural College in the West," we would simply state the fact that Farmers' College of Ohio has already a history from its incipient movement, of near a quarter of a century, and as a regularly endowed College of over twelve years; and has been instrumental in educating, to a greater or less extent, over two thousand young men, some of whom are men of influence and position in several of the States of this Union, and not a few in foreign lands as Missionaries or pioneers. This is not the first time we have had the pleasure to read the record of the pioneer Agricultural College, even in our own State. The same story was recently told of the first Agricultural College in the West, as being located at Oberlin, fully manned with a corps of lecturers, afterwards by some strange freak transferred to Cleveland. And now in eloquent phrase we are told that on the far off margin of the "cultivated portions of our country, where the forests primeval are just vanishing before the encroachments of civilization, the youthful and vigorous State of Michigan, *first* among her sister States, dedicates an Institution to the instruction of men who are devoted exclusively to the cultivation of the earth. Established on no precedent, it is alike a pioneer in the march of men and the march of mind." If this is intended to be said of this Institution as being the first established by State patronage the fact must be conceded, but if absolutely the PIONEER in the "march of men and of mind," we take issue and prefer the humble claim of our own priority.

But we will not stop to boast of honors in regard to our entrance upon the race but hail our sister College as a noble coadjutor in this department of educational labor, and hope and pray that she may be more successful in her labors than we have yet been, in convincing the yeomanry of our country that it is as important that they as a class should be as well educated as the few whom the learned President has well said, "live on the miseries, credulity and ignorance of mankind," viz: the professional men,* who are now the only men deemed worthy of the highest educational advantages of our country.

* The mere parasites of society, insinuating themselves among the bark are ther carefully nurtured, while the parent tree, grafting its strong roots in the earth has been neglected.

The Directors of Farmers' College, as well as the Directors of Michigan Agricultural College, have marked out a course of mental training as extensive for the scientific agriculturist as for the man of letters, and on its completion give equal honors. And we trust it is the mission of American Institutions to enlarge the platform of a University education, until it shall embrace the liberal education of men for every honorable calling and pursuit, and let it be our zealous endeavor unitedly to labor to effect so desirable a consummation.—ED.

A VIEW OF MOUNT WASHINGTON.

(SEE ENGRAVING.)

> "Who first beholds those everlasting clouds,
> Who first beholds the Alps—that mighty chain
> Of mountains, stretching on from east to west,
> So massive, yet so shadowy, so ethereal
> As to belong rather to Heaven than earth—
> But instantly receives into his soul
> A sense. a feeling, that he loses not,
> A something that informs him 'tis a moment
> Whence he may date henceforward and forever."

There are scenes in nature calculated to inspire a feeling of reverence and stir the fountains of the human soul to its lowest depths. The beautiful prairies of the West, robed in their livery of green and decked with innumerable flowers, or waving in golden harvests; the mighty Niagara with its rush of waters, and its foam crested waves rolling and tumbling into the fathomless abyss below, are well calculated to effect such a result. But the strength and power of Omnipotence imaged forth on the lofty mountain's brow holds a commanding influence over the human heart. 'Tis here you feel your own insignificance, and you are ready to bow down and give homage to your Maker. Need we wonder that in ancient times mountains were holy places, and were regarded as the dwelling place of the Gods?

Mount Washington, the summit of which is represented by the *cut*, is naturally enough brought to our minds by the scorching breath of the month just closing. Methinks those two houses seen on the top of Mount Washington are now the abode of comfort, and the

crystal water gushing from those cool springs would be refreshing. How true it is that "distance lends enchantment to the view."

The house to the right, as you look at the engraving, was built in 1852, within a few feet of the highest part of the mountain which is *six thousand two hundred and eighty-five* feet above the ocean level. It is built of huge unhewn stones blasted from the mighty pyramid of rock on which it stands. It is fastened to its foundation by strong iron bolts and the roof is held down to its place by four iron cables which, passing tightly over it, are firmly anchored in the rock fore and aft. The tip top house, on the very pinnacle of the mountain, was built in the summer of 1853. It is also of rough stone, has a flat roof and is held to its place with anchors and bolts, as the other. Indeed without this precaution the whole structure would be scattered in fragments by the fearful hurricanes of winter that hold high revelry in these upper regions.

The following is a description from the pen of another, of the scene represented by the accompanying cut.

"These two houses are unitedly managed by a company of hardy mountaineers, who spare no pains to make this famous resort a true home to the admiring stranger and pleasant resting place to travel-worn pilgrims.

All who seek health and, pleasure in this pure mountain climate or a gratification of curiosity for the wonderful in sublime scenery will find here ample accommodations for their comfort, both day and night. The changing scenes and reflections connected with every sun-set and sun-rise, enjoyed from this elevation, are remarkable beyond description. Here too, sunlight plays upon the bold rocks, while black storms armed with wind and thunder, move like the shadows of destroying giants in the regions below. Here the moon with its starry host sends down the solemn light upon the gray crags, kindling into a fiery glow a hundred lakes, ponds, rivers and dashing mountain streams, and strangely enlivening every shady glen with flitting lights and shades for the sombre world. Never did Seer from the land of the Pyramids, or Chaldean star-gazer study the Heavens from an Observatory like this. Ye who would enjoy the sports of stream and forest come to these mountains! Ye who have love for novelty and a desire for true pleasure come and behold GOD's wisdom displayed in the bold outlines of this gigantic monument of His Almighty power! Here the undying features of grandeur were molded in imperishable materials bv His hand."

CINCINNATI HORTICULTURAL SOCIETY.

(CONTINUED FROM PAGE 332.)

CINCINNATI, Saturday, June 20.

VICE PRESIDENT STOMS in the chair.

Minutes read and amended by adding to the list of fruit exhibited last week the following Strawberries, viz: Hovey's Seedling, by Mr. E. JOHNSON, and Mr. W. H. PYE the same; Mr. CARY the Superior and Prolific.

Further time was given for the reports of the special committees on the subjects of the City Park and Market restrictions, and the committees continued.

Mr. N. GREGORY was elected to membership.

The tables of the Society's Hall were laden with some of the most luscious fruits that ever blushed outside of Eden. A large number of persons were in attendance, including several ladies, who seemed to be delighted spectators of the horticultural beauties spread before them.

Mr. CARY made some interesting remarks on the fertilization of the pistillate Strawberries in reference to Mr. LONGWORTH's communication of last week. He recommended deep culture as best for the Strawberry, stating that he had traced their roots to a depth of eighteen inches; and that with deep culture, drouth would never seriously injure the Strawberry crop.

Mr. GRAHAM alluded to an interesting and important fact observable in the hermaphrodite Strawberry—*i. e.*, that the perfect and well-developed berries of this class all show a line of junction in their form as of two berries united, signifying, as he thought, the sexual combination of its peculiar hermaphrodite character.

And as a fact most conclusive of the sexual features and functions of the staminate and pistillate plants, Mr. GRAHAM further stated that he had cultivated the plants of McAvoy's Superior for three years, all pistillates and no staminates, and they had not yielded him one single berry, but remained perfectly sterile. Mr. STOMS corroborated Mr. CARY's views on the fertilization of the Prolific, and thought Mr. LONGWORTH's theory of the fertilization of the Superior not well founded.

Mr. KELLY said he had known Hovey's Seedling some ten or twelve years and that the *average* is not more than three ripe berries on a stem at a time in perfect development, and that what he means by a single plant is a single root and stem and not a stool of plants, while at Mr. CARY's grounds, which he had recently visited, he found the Prolific yielding ten or a dozen ripe berries to the truss. Mr. FRAZIER and Mr. N. GREGORY also joined in the remarks and gave useful and interesting suggestions.

On motion of Mr. HOWARTH, the kind offer of Hon. R. HOSEA to present additional volumes of *The State Agricultural Society's Report for* 1855, was thankfully accepted.

The Chairman announced the receipt of one dozen palm-leaf fans, for the use of the Society, presented by Mrs. MAXWELL, to whom a vote of thanks was cordially tendered.

Among the fruit exhibited Mr. MOTTIER's fine variety of excellent cherries was very attractive, and his Black Tartarian and De Coisey's proved very much so to the taste of those present. Mr. YOUTCY's basket of Hovey's Seedling was universally admired, as was the dish of Mr. GREGORY of the same kind of berries. Branches of Currants and Gooseberries were exhibited by Mr. JACKSON, bearing most prolific burdens of finely-developed fruit—one slender twig of the latter, only ten inches long, bearing forty-seven good-sized berries.

REPORT OF FRUIT COMMITTEE.

Cherries.—From E. J. HOOPER: Kirtland's Mary; unsurpassed in sweetness, tenderness and juiciness—quite early—recommended for cultivation. Governor Wood; splendid cherry; fine flavor; rather firm. May Duke; one of our most prolific and best early cherries. Early Richmond; an early prolific and profitable pie fruit; not so good as the Early May. White Heart; good and sweet; a Bigarreau. Elton; large and very rich. Black Tartarian; large, beautiful, fine and rich flavored. Napoleon Bigarreau; one of the best; large, sweet and fine.

From J. E. MOTTIER.—Belle de Choisy; rich and very sweet; not so tender and juicy as the Mary. Early May; very good. Elton; very fine and good. May Duke; very good and prolific. Black Tartarian; one of the very best. Red Bigarreau; medium sized; good. Black Eagle; very good; not quite as rich as the Black Tartarian, owing probablv to the wet weather.

From S. S. JACKSON.—Doctor; very rich and superior; well worthy of cultivation. Early May; very good.

Strawberries.—From F. G. CARY: Longworth's Prolific and Mc-Avoy's Superior; very fine specimens; some presented as they grow on the trusses; both these berries are continuing to grow in favor.

From Mr. YOUTCY, of Kentucky.—Hovey's Seedling; finer and larger, never exhibited; one of the splendid baskets most beautiful both in color and form; still maintaining its high position.

From S. S. JACKSON.—Extra Red; an immensely large bunch of uniformly-sized fruit, bright in color as usual; vastly prolific and hardy; a seedling of medium size, not extra, but may be valuable.

From N. LONGWORTH.—Allen's Pistillate Seedling; a good bearer and of fair size; of high, rich flavor. Wilson's Albany Hermaphrodite Seedling; well shaped; a large and fine berry; may rank next to the Prolific, as all the blossoms bear perfect fruit. A new Pistillate, of good size and fine flavor. Boyden's Hermaphrodite; a very large fruit, well shaped, described in the last report and some magnificent specimens of the same, preserved in spirits from last year. Kenevet's Giant; very large size. New Pistillate Seedling; first year of bearing; good shape and color, rich in flavor, and bids fair to rank among the best. A bunch of Hautbois. Some splendid bunches of the Extra Red, which is great with us here, but, judging from Mr. PRINCE's report, not worth much East.

From Mr. GREGORY, of Green Township.—An unselected dish of Hovey's Seedling, showing it to be one of the very best fruits for market, in size and color, shape and flavor.

From W. MEARS.—Orange Prolific; good color, of rich quality; medium. Washington; good flavor and color; well shaped. Crimson Cone; good flavor; medium; conical. Climax; good size and flavor. McAvoy's Superior; very good specimen. Jenny's Seedling; of good shape; first-rate in flavor. Monroe Scarlet; good in size, color and flavor. Moyamensing Pine; very prolific. Burr's Columbus. Hovey's Seedling; very fine. Longworth's Prolific; fine. Schneicke's Pistillate; also fine. Black Prince; dark, striking in its deep color, rich in appearance, but rather acid.

Currants.—From S. S. JACKSON.—An immensely prolific bunch of the Cherry Currant, of extraordinary fine size; not yet ripe, of course.

Gooseberries.—From S. S. JACKSON—Very prolific specimen of this valuable sort; valuable for productiveness and freedom from mildew.

SATURDAY, June 27.

Vice President STOMS in the chair.

Mr. WHITE, from the Special Committee on Market Restrictions, submitted their report, which was, on motion, received and ordered to be filed and Committee discharged.

Mr. FOOTE, from the Committee on Public Parks, asked for further time. Granted.

Elected to Membership.—JOHN DECAMP and LESTER OAKLY, of Bank Lick, Ky.

Professor WARD resumed his remarks upon the Honey-bee, which contributed much to the interest of the meeting.

Mr. STOMS, having called Mr. FOOTE to the chair, proceeded to make some remarks in refutation of Mr. GRAHAM'S theory, advanced last week in relation to the line of junction observable in the hermaphrodite Strawberry, being a peculiarity indicative of its duplex sexual character. Mr. STOMS regarded the theory as absurd and preposterous, and did not wish, the Society to be committed, by silence, to any such doctrine; and proceeded to show that the fact claimed by Mr. GRAHAM, in support of his theory, is not universally true of the hermaphrodite berries, while it is found also to occur in berries of plants not hermaphrodite. And to make the absurdity of this transcendental position apparent, he would challenge Mr. GRAHAM to identify either of the following seven varieties of "well-developed" berries as being the production of hermaphrodite plants, viz: Iowa, Genessee, Large Early Scarlet, Boston Pine, Swainstone, Hautboy and Alpines (red and white). He further stated that the most perfectly developed berries of the Longworth Prolific do not show the line of junction, as alluded to by GRAHAM, and those that do are so isolated in this peculiarity as to have no parallel in any other strawberry grown from hermaphrodite plants. Mr. STOMS' remarks led to numerous other remarks and views from various members touching the point presented. Mr. GRAHAM was not present to reply.

The exhibition of flowers was extensive and beautiful. We think that even Flora herself would have smiled in contemplation of the tasteful tribute of floral beauty and fragrance laid at her shrine from the garden of Mr. HEAVER, on the Reading-road. The offerings must have proved most grateful to the Floral Goddess, both by reason of their perfection and rarity. Here is Mr. HEAVER'S list: Moss Roses: The Princess Adelaide, Alice Leroy, Mt. Ætna, Marbled,

General Dronot, Lancii, Purpurea Rubra, Prolifere, Elizabeth Roove, Queen Victoria, Countess of Marinais, White Unique, White Moss. Also, the Red Mycrophylla, Caroline de Sansal, Lion de Combats, Garibaldi, Madam Plantier; the Calystegia Pubescons, Delphinium Hendersonii (new), Sambacus Variegata Aurea, Sambacus Nigra Plena, S. Variegata Argentea; three beautiful varieties of the Alder. *Phlox*—The Emely Mehl (new).

Mr. HOWARTH'S gardens, Walnut Hills, were also handsomely represented by Roses in this Court of Flora. There were Prince George IV, Bonquet Blanche, Baron Prevost, Louis Napoleon, Prince Albert, White Moss, English Moss, River Moss, Luxemburg Moss, and others of not less beauty, whose names we could not learn.

REPORT OF FRUIT COMMITTEE.

Mr. HOOPER, Chairman, reported—*Cherries.*—Napoleon Bigarreau; largest on the tables; of high, rich flavor, but this season frequently imperfect. Kirtland's Transparent; beautiful, rich, sweet; medium size.

From S. S. JACKSON.—Black Seedling; better than the common English Black Heart, though smaller. Red Heart; handsome and good flavor. White Tartarian; sweet, very prolific, very small; of but little value. Yellow Spanish; not fully ripe; fine when mature; immensly productive; is also known under the name of Graffon. Beechwood; very pleasant and good. Reine Hortense; similar to early Richmond or Kentish, perhaps the same; is a very profitable pie cherry.

From Mr. SAYRES.—Another variety of Gooseberry, the Houghton; more prolific than the one known as Houghton, and equally as good.

ON EXHIBITION.

Cherries.—From Mr. HEAVER.—Black Heart, Black Tartarian, Belle de Choisy, May Duke, Manning's Mottled, Holland Bigarreau, Reine Hortense.

From Mr. JACKSON.—The Black Eagle; a splendid cherry for the table.

From P. S. BUSH.—May Duke and Early Richmond.

From Colonel CALDWELL.—Napoleon Bigarreau; two quarts, not selected; rather imperfect this year.

From F. MEARS.—White Tartarian.

From Mr. CONSADINE.—May Duke.

From S. Zimmerman.—Napoleon Bigarreau; very fine.

Strawberries.—From N. Gregory: Hovey's Seedling; and some from H. Youtcy; very fine.

From Mr. Longworth: Ninett's Giant; bids fair to become one of the best berries yet presented.

Some of the Cherries presented were of great size, beauty and deliciousness. A specimen introduced by Dr. Sturm, of the Napoleon Bigarreau, from Mr. Stout, of Delhi, was wonderfully prolific; no less than five bushels gathered from one tree. So, too, the Early May and Napoleon Bigarreau, by Mr. Mottier, were of superior size and quality. Mr. McWilliams also presented the Yellow Spanish, Black Eagle and Napoleon Bigarreau.

Among the articles on Exhibition was another specimen of Mr. Striker's mammoth pie-plant, one dozen stalks weighing *twenty-two pounds!* downright bludgeons in size and weight. Why not arm the Police with such weapons? Their formidable appearance would certainly "command the peace," even in the Thirteenth Ward; and when made into pies would "command attention" anywhere.

The meetings of the Society are largely attended and much interest manifested.

The Premium List for the current year was upon the table for distribution.

Saturday, July 4.

Vice President Stoms in the chair. The minutes were approved after adding to the Fruit Committee Report of last week the following Cherries, omitted from Mr. S. S. Jackson's list—viz: The English Ox heart, Donna Maria and Early Richmond.

Members Elected.—Mr. E. P. Starr and Mr. T. S. Brown.

FRUIT EXHIBITED.

By Gen. M. S. Wade, a basket of Lady Apples in fine, sound condition; pleasant to both the eye and the tooth. The specimens showed to great advantage the remarkable keeping qualities of this diminutive but handsome variety of fruit. A new seedling Strawberry, by Dr. Petticolas; a well flavored and handsomely colored berry, promising to be a prolific bearer, the specimen exhibited having eleven ripe berries and ten green ones on a single stem. Two small branches of the Yellow Spanish cherry, from Miss Cist, of College Hill—these, on account of their prolific abundance, perfect development and blushing beauty, were received with a note of gen-

eral admiration. This most acceptable contribution to the exhibition of the day was appropriately accompanied by a bouquet of such singular beauty of coloring and such delicacy of perfume that even a stranger's mind might stand assured that intellectual refinement and cultivated taste guided the fair fingers which so harmoniously blended the varied radiance of those floral gems. Oh, that more ladies, who might, would seek similar refinement and taste in the health-giving delights of Horticulture!

This being our Country's "Natal Day," no further business was transacted and in honor of the anniversary occasion the Society adjourned.

SATURDAY, July 11.

President WARDER in the Chair. Minutes read and approved. Vice President STOMS being called to the Chair, the President, as chairman of the special committee heretofore appointed on Mr. LONGWORTH's communication, presented a Report on the "Extra R, or No. 3 Strawberry," which was, on motion, accepted and ordered on file, for publication for the Annual Transactions. This report was of great interest, and distinguished for clearness and conciseness of arrrangement, and much research of facts most valuable to horticulturists. The marked ability which characterized it was highly appreciated by the members present. The paper was too voluminous for present report.

Members Elected:—W. H. HATHAWAY, Cincinnati, and W. D. DEVIN, of North Bend.

Dr. MOSHER made some interesting remarks in relation to the mildew of the crop. He said the vineyards had wintered well, and though somewhat late as to season the vines came forward well in the spring and bloomed handsomely. Everything bid fair for a fine crop until about twelve days ago when on Saturday, June 27, there came a warm rain and the Sunday following continued warm and moist, and on the evening of Sunday, the 28th, the mildew appeared in his vineyard and on Monday morning fully one-third of his grapes were white with the fungus. The air was clear and breezy on Monday, the 29th, and the mildew ceased to spread, and the grapes were thenceforward doing well until some four days ago, when it became again rainy and warm, and thereupon the mildew reappeared and increased; but now again, for about two days past it seems to have ceased. But he regards his vineyard as about one-

third of the crop nearly ruined—in some portions the fruit is all gone. His vineyard is on a pretty steep hill-side, with a southward aspect and with a free exposure to the air. The vines are planted in spaces of three feet by five. No mildew on the vines or foliage; it is confined to the berry. The lowest portion of his ground is worse than the highest, and the intermediate part is much worse than the lowest.

Dr. M. stated he had examined the fungus plant, which we call "mildew," under a microscopic lens with a power of about four hundred multiplications, when the grape seemed covered as with a forest of pines; each berry bearing about five hundred of these fungus *trees*, which to the naked eye appear like an impalpable powder. This tree-growth is from a seed which from its germination to perfection, he had observed under the lens and found it to require about twelve hours to complete its career, ripen its seeds for a five hundred fold reproduction and perish. Dr. M. suggested that the reason of its rife recurrence in damp weather is owing to the fact that in dry weather the cuticle, or epidermis, enveloping the grape becomes hardened to such a degree of firmness as to resist the action of the mildew; while in damp weather the delicacy of the skin, then softened by the atmospheric moisture, seems to render it subject to the deposit of the mildew-spores.

In answer to a question by Mr. Kelly, Dr. M. stated that he did not consider mildew as the primary cause of the grape rot, though he could not speak of this as a positive assurance. In the case of the mildew the berry affected drops off and thus clusters are left broken and imperfect. He knew of no practical remedy but assured members that if they would examine the mildew with the microscope they would behold wonders.

Mr. Kelly suggested the application of the hydrosulphite of lime to the vines affected by mildew, as was done frequently in gardens and green houses.

D. Warder thought it impracticable of application to large vineyards; also, that from the rapidity of its development no timely preparation was possible.

To this Mr. Kelly replied that the French employed it extensively, and that its application was more with a view to prevent its increase than to prevent its advent. The cost was trifling, only about $3 per acre, and the means of preparation simple, which he gave, one part sulphur to two parts lime, with about two thou-

sand times their volume of boiling water; let stand 35 or 48 hours, then draw off the clear liquor and apply to the vines by garden engines. It does no harm to either vines or fruit, and its effect on the functions is instantaneous, while it will adhere to the foliage for weeks.

In view of the interesting remarks of Dr. MOSHER and Mr. KELLY on this point, Mr. STOMS moved that Dr. MOSHER, with Messrs. KELLY and BUCHANAN, be appointed a special committee to collect facts and report thereon, touching the question of the feasibility of grape growing as a remunerative crop in view of the casualities of the seasons, and on the remedies practicable for the prevention of such casualties. Carried.

An interesting conversation sprung up in relation to the application of the same remedy, the hydrosulphite of lime, to prevent the ravages of the curculio. Mr. CONSADINE made some very interesting and valuable remarks as to his experience on this point, expressing his belief that it affords a sovereign remedy against the depredations of this horticultural pest. Mr. MULLET, Mr. ERNST, Dr. WHIPPLE, Mr. WILLIAMS, Mr. KELLEY, Mr. FOOTE, and others contributed much interesting information as to the habits and tastes of this insect; and it would seem indeed impossible that he can much longer escape a circumvention of his ravages.

Mr. CONSADINE promised on next Saturday to make an exhibition before the Society of his present crop of Plums under the treatment above indicated.

Mr. ORANGE also remarked that he had found the application of sulphur and salta most effectual remedy for expelling curculio; but unfortunately the remedy had not only killed the curculio, but had also killed the trees; or possibly had killed the trees without killing the curculio—he was not certain which.

FLOWERS EXHIBITED.

The tables were ornamented with six flowering Fuschias, of the greatest beauty it was ever our fortune to behold, from the gardens of Mr. JOHN SAYRES, for which a premium of $3 was awarded by the Committee.

Mr. SAYRES' "Cottage Garden" was also represented by another beautiful specimen from the floral department, the *Indigofera Decora*, bearing a flower of wonderful delicacy and beauty.

FRUIT EXHIBITED.

Cherries.—By S. S. JACKSON—Costa` Duke, Donna Maria, Beech-

wood (a seedling), Belle Magnificence, May Duke. Currants.—Cherry, Red Duch, Champaigne, White Grape, Victoria, Red Grape.

By J. SAYRES.—Cornation Cherry.

Raspberries.—By Mr. WILLIAMS: The Franconia, Barnet, Black-Cap, White American. Pears.—The Amerie Jeannette.

Gooseberries.—By Mr. IVES: English Black Currants, Houghton, Red Dutch, Large English.

By D. O. REEDER.—Peabody Strawberries.

REPORT OF FRUIT COMMITTEE.

Amerie Jeannette Pear—Much larger than the little Muscat and equally early; about the same in flavor; chiefly of value for its earliness, and very saleable on that account.

Peabody Strawberry.—Its first appearance here; very high aroma; over ripe; can not judge of its quality entirely, but is of good flavor; not large, of course, this being the first season of its ripening.

Franconia Raspberry—Very large; rather light and fine color; of fine flavor, but requires protection in winter in this climate.

Barnet Raspberry—Very like the Red Antwerp, if not the same; very prolific; flavor rich.

Ohio Overbearing—Good flavor; rather rich; early; very prolific; bears a crop in the autumn when the weather is sufficiently wet or favorable; very hardy.

American Yellow—Good, sweet, hardy berry.

Cherry Currant—Very large and fine; bunches very long; the best known.

Red Grape—Large, long clusters, and next in value to the cherry.

White Grape—Large and fine; rather acid, on account of its not being ripe.

Champaigne—Delicate; not quite ripe, but good; color as its name denotes.

Red Duch—Very prolific, good Currant; not easily surpassed.

Victoria—Very large and fine; a good berry; a good fall grower, and valuable on account of its lateness.

Carnation Cherry—Handsome, fine color; rather over medium size; a good deal of subacid; pleasant, but not of high flavor.

Belle Magnificence—Fine size and color, rather watery and a very little astringent.

Beechwood—Again exhibited; very rich, sweet and delicious; a seedling from the Black Tartarian, but not near as large.

Costa Duke—Of good size; fine; of the acid family.

Red Bigarreau—Very rich, of fine color, greatly prolific and nearly first-rate in flavor.

Two Varieties of the English Gooseberry; one the Crown Bob, of large size and free from the mildew.

American native Black Currant; specimens of large size; requires some shades.

EDWARD JAMES HOOPER, *Chairman.*

METEOROLOGICAL TABLE.

Observations made at Farmers' College, College Hill, Hamilton County, Ohio, Latitude 39° 19', W. Lon. 7° 24' 45" for the month of June, 1857, by Prof. R. S. Bosworth. Hight of Station above the Sea, 800 feet.

	BAROMETER, CORRECTED FOR TEMPERATURE & CAPILLARITY.				OPEN AIR THERMOMETER.				CLOUDS—COURSE & VELOCITY.						WIND—DIRECTION & FORCE.			RAIN & MELTED SNOW.		
	7 A. M	2 P. M	9 P. M	Mean.	7A. M	2 P. M	9 P. M	Mean.	7 A. M.		2 P. M.		9 P. M.		7. A. M.	2 P. M.	9 P. M.	Hour Began.	Hour Ended.	Am't Inch.
1	28.820	28.770	28.832	28.817	66.0	72.0	59.0	65.7	4	W. 6	8	S. W. 6	0	0	S. W. 2	S. W. 5	W. W. 4			
2	28.795	28.825	28.852	28.824	53.0	71.0	59.5	61.2	0	0	4	W. 5	0	0	W. 2	W. 4	0			
3	28.832	28.900	28.825	28.852	66.0	82.0	62.5	70.2	0	0	3	S. W. 8	0	0	S. W. 4	S. W. 7	W. 1			
4	29.040	29.035	29.038	29.040	55.0	58.0	52.0	55.0	10	S. W. 8	10	N. E. 2	0	0	0	N. E. 1	0	5 P. M.	in night	0.510
5	29.078	29.035	29.028	29.047	57.0	67.0	56.0	60.0	0	0	2	N. W. 4			0	N. W. 4	0			
6	29.040	28.990	28.905	28.978	61.0	74.6	59.0	64.8	2	Cirri.	1		0	0	0	W. S. W 4	0			
7	28.855	28.864	28.892	28.870	70.0	75.0	68.0	71.0	1	"	10	S. W. 8	2	cir. st.	S. W. 2	S. W. 5	0			
8	28.900	28.941	28.980	28.940	74.0	91.0	78.0	81.9	1	"	2	S. W. 6	10	W. 6	S. W. 2	S. W. 4	W. 7			
9	29.039	29.032	29.050	29.040	71.5	83.0	69.0	74.5	4	S. W. 1	6	S. W. 5	0	0	0	W. 1	0			
10	28.979	28.884	28.712	28.858	72.5	82.3	62.5	72.4	3		10	S. W. 6	10	Nim.	0	S. W. 1	N. W. 1	1&3P.M.	2&5P.M.	1,130
11	28.730	28.800	28.820	28.780	64.0	70.0	63.0	67.7	0	0	1	W. 5	0	0	W. 5	W. 4	0			
12	28.840	28.760	28.806	28.802	67.0	75.0	70.5	71.2	9	W. 1	10		4	S. W. 1	W. 3	W. 1	0	8 A.M.	12 M.	
13	28.882	28.940	28.954	28.925	71.5	78.0	70.5	73.3	4	W. 6	10		10		W. 1		W. 2	1½ M.	2½ A.M.	1.490
14	29.080	29.108	29.077	29.068	72.0	84.0	71.5	78.8	9	0	9	0	0	0	0	0	0			
15	29.087	28.984	28.969	29.013	75.0	92.0	77.5	81.5	2	S. W. 4	4	S. W. 6	0	0	S. W. 1	S. W. 4	S. W. 1			
16	28.940	28.825	28.870	28.878	80.5	88.0	70.0	79.5	2	Cirri.	5	S. W. 6	10	Nim.	S. W. 4	S. W. 7	0	1½ P.M.	8 P. M.	0.500
17	28.867	28.869	28.879	28.838	72.0	80.0	61.0	70.0	6	S. W. 9	5		10	N. W. 6	0	S. W. 5	N. W. 6	9½ P.M.	11 P. M.	
18	28.815	28.827	28.885	28.876	62.0	68.0	55.5	61.8	5	S. W. 9	10	W. 8			S. W. 3	W. 5	N. W. 1	11 A. M.	in night	0.220
19	28.875	28.895	28.885	28.885	64.0	75.0	55.0	64.7	2	W. 4	8	W. 7	0	0	W. 3	W. 5	0			
20	28.802	28.887	28.975	28.888	60.0	72.0	58.0	63.3	10	S. W. 10	1	W. 8			S. W. 5	W. 5	0	5 A. M.	9 A. M	0.440
21	28.982	28.980	28.927	28.963	72.0	68.0	58.5	66.2	0	0	10	W. 7	10	W. 5	0	W. 6	W. 5	9 P. M.	10 P. M.	0.410
22	29.080	29.100	29.110	29.097	55.0	70.0	58.0	61.0	0	0	5	W. 5	1		N. W. 4	N. W. 5	N. W. 2			

23	29.145	29.119	29.147	29.137	64.0	75.0	61.5	66.8	0	0	0	0	0	0	0	N. E. 2	0			
24	29.200	29.127	29.128	29.150	66.0	83.0	63.0	70.7	1	Cirri.	2		0	0	S. 1	S. 2	0			
25	29.170	29.089	29.092	29.117	70.0	84.0	63.5	72.5	0	0	0	0	0	0	0	0	0			
26	29.149	29.074	29.074	29.100	78.0	88.0	71.5	79.2	0	0	0	0	0	0	0	0	0			
27	29.084	29.064	29.040	29.063	76.5	90.0	78.0	81.5	1	Cirri.	5	W. 2	4		0	E. 1	0	In Night.		
28	29.014	28.980	28.954	28.983	78.0	80.0	69.0	75.7	10	S. E. 1	10	N.W. 4	2	Cirri.	0	0	0		8 A. M.	0.230
29	29.014	29.000	28.994	29.000	66.0	80.0	66.0	70.0	6	0	1	N. 4	0	0	N. W. 2	N. W. 6	0			
30	28.980	28.930	28.945	28.952	68.0	74.5	57.0	66.5	2	N.W. 4	3	N.W. 5	0	0	N. W. 3	N. W. 4	N. W. 2			
Sums.				868.901				2095.3												4.990
Means.				28.963				63.2												

REMARKS ON WEATHER.

5. Snow-ball in bloom (viburnum.)
6. Locust leaves fully developed.
10. Locust in bloom. A thunder storm at 3 P. M.
13. A violent thunder storm between 1 and 3 A. M.: also one with hail ¾ in diameter at 2 P. M.: also a storm at 5 P. M. A slight rain at 12½ P. M.
16. A light thunder shower at 1½; a violent one at 6 P. M.
17. A dash of rain at 9½ P. M
18. Some rain at 11 A. M.
19. Strawberries fully ripe.
21. Passing showers during afternoon and evening.
22. Minimum Thermometer 50°
27. A sprinkle at M.
28. A slight shower at noon.

REMARKS.—The Barometer has ranged unusually low The average temperature is nearly ten degrees lower than that of the same month last year.

EXPLANATION.—The state of the sky is indicated in this table by numbers from 0 to 10; 0 signifies perfectly clear sky, 10 that it is entirely covered with clouds, and intermediate numbers show the number of tenths clouded. The direction from which the wind blows is shown in the initials of the points of the compass. Its force is indicated by numbers; 0 meaning a perfect calm, and 10 the most violent hurricane.

MONTHLY EXTREMES.

	MAXIMA.				MINIMA.			
	7 A. M.	2 P. M.	9 P. M.	Month.	7 A. M.	2 P. M.	9 P. M.	Month.
Barometer, . . .	24th. 29.200	24th. 29.127	23d. 29.147	29.200	11th. 28.730	12th. 28.760	10th. 28.712	
Thermometer . .	16th 80.0	15th. 92.0	27th. 78.0	92.0	2nd. 53.0	4th. 58.0	4th. 52.0	50.0

FARMER'S HYMN.

God of the hills and verdant plains,
  I bless thy ruling hand—
For drifting snows and gentle rains,
  Are sent by thy command.

The opening Spring is deck'd with green,
  With each delightful flower,
And every leaf and bud that's seen,
  Bears impress of thy power.

The ripening summer's burning sun—
  The winter's piercing cold—
The changing seasons as they run,
  Thy wisdom, Lord, unfold.

The joy that centres in my cot,
  No less thy wisdom owns ;—
With rural happiness my lot,
  cannot envy thrones.

Love dwells within my peaceful breast,
  At every morning's dawn—
And when the sun sinks in the west,
  My cares are all withdrawn.

Although secluded from the mart
  Where crowd the thoughtless gay—
Wherein the scenes that vex the heart,
  Men waste their lives away ;

Beside the hill, the purling brook—
  Glad nature's fond retreat—
With gratitude to Thee I look,
  And songs of joy repeat.

For lot so blest, my voice I raise,
  Almighty God, to Thee ;
Thou needest not an angel's praise,
  Much less such praise from me.

But I will bless thy bounteous hand,
  For all thy gifts bestowed ;
Before my heart could understand,
  Ten thousand thanks I owed.

MOUNT AUBURN
YOUNG LADIES' INSTITUTE.

THE

CINCINNATUS.

VOL. II. SEPTEMBER 1, 1857. NO. 9

THE FUNGI.

THE propagation and development of the Fungi are among the most curious subjects in the economy of nature. They form an extensive family of plants belonging to the Linnæan class *Cryptogamia*. Some of the species go under the familiar name of ***Mushrooms.*** These plants vary greatly in size, form, color and consistence. They are found of all colors except green. Their consistence is coriaceous, fleshy, spongy, gelatinous, corky or ligneous. Their anatomical structure, when examined with the microscope, is found to consist of cells, some round, others elongated. When at maturity they uniformly present minute closed globules or spores, which are capable of reproducing the plant, like seeds. The abundance of these spores and sporules in some fungi may be said to be legion.

There are now over two thousand species of fungi known, and these are distributed into some hundred and sixty genera. We would say that in regard to this class of plants, their mode of growth and development, much remains still in the dark, and not until since the microscope has been brought to such degree of perfection could they be successfully investigated. Their sporules or germs are infinitesimal, too minute in general to be injured by any mechanical means and have the power of resisting any chemical process, and will consequently remain unharmed in earthy or vegetable substances for an unlimited period of time; and they may pass through the digestive organs of animals or endure the action of heat without sustaining the smallest injury; and there is good ground to even

suppose that these sporules may pass into the circulation through the spongioles of plants and develop their growth on fruit and stem; which development can only be prevented by the action of the more powerful metalic salts. Fungi when they decay are subject in their turn to the attacks of other fungi; thus while they themselves are parasitical they give rise to, and support another family of parasites; and to what extent this may go on we presume will remain long undetermined.

Most of the fungi are of a highly poisonous nature, and even those kinds which in particular situations are not, become poisonous by a change of soil. They differ from many noxious vegetables in this, that their poison cannot be separated by boiling or even by distillation. Rapid growth is another marked characteristic of fungi. "To grow up in a night and perish in a night," may be literally said of some of them at least; and if all the circumstances favoring their development, as regards temperature, moisture and absence of light, are present the earth is at once overrun with numerous families of them.

The fungi of the genus *Accidium* and those of the allied genera *Uredo* and *Puccinia* are formidable enemies of the farm, often proving destructive not only to fruits and grains but to plants. The rapid, irrepressible and devastating spread of one of the various forms of fungi has but too recently manifested itself in the unexampled destruction of our late promising grape crop, making almost a clean sweep of this luscious fruit in a few days.*

SMUT—BUNT—UREDO-FŒTIDA.

We would here direct attention in our remaining remarks to one species of fungi which has been very prevalent the past season, confined so far as we are aware entirely to wheat, called in common language *smut* or *smut-ball*, in England and on the continent *bunt;* which name it derived in honor of an excellent cultivator who published several memoirs on Bunt from the years 1735 to 1755, technically and botanically *Uredo-fœtida.* This is perhaps the most formidable pest to which our wheat crop is subject and has been the destroyer of millions of bushels of the world's greatest cereal the past season, for it not only usurps the stead of innumerable wheat grains but poisons and taints the entire crop where it prevails, rendering it unfit for bread and hence comparatively useless.

* This subject is now under investigation by a Committee of the Cincinnati Horticultural Society, and we forbear further remark upon it.

WHAT IS SMUT—BUNT—UREDO-FŒTIDA?

There has been more speculation, contrariety of views and wild and fanciful theories about this form of smut than almost any other agricultural or horticultural pest.

The disgusting odor which it emits may be perceived on passing through a field where it prevails.

On being rubbed it has an oily consistency, becomes cohesive to the fingers and intolerable to the sense of smell.

When an infected head is broken it diffuses itself as an inpalpable powder over everything in reach, adhering to every sound grain upon which it falls; and in harvesting, threshing and winnowing it is impossible for a single grain to escape defilement. So obnoxious is it that flour manufactured of wheat having but an occasional head of this smut in it, it is perceptibly tainted by it.

It is curious to listen to the numerous theories of farmers as to the supposed cause of this malady. We will briefly mention a few of them and their refutation.

One alleges that it arises from a want of proper fertilization when the wheat is in bloom, either from the pollen being washed off by rain or from some putrefactive chemical change which it may undergo. This cannot be so, for smut is found to affect the very organs of fructification, either to impair or destroy them before the pollen can be formed.

Another not so learned stoutly affirms that smut arises from the humidity of the atmosphere or the prevalence of fogs, or the breaking forth of intense sunshine while the crop is in a moist condition. No doubt this is so, says neighbor B., for I find yonder southern exposure develops more smut than any other part of my field. Thus from such hasty generalization the matter is at once settled, the point is clear. But by careful experiment this theory has been disproved; for it is found the fact that smut is observable in an early stage of the plant's vegetation, even long before it has escaped from the leafy envelopes.

I have found it! I have found it! says a third. It is caused by excess of moisture; wet undrained ground is sure to produce smut. Neighbor S., who lives next me, by underdraining his ground which was just like mine has no smut while mine is full of it. Hence underdraining is pronounced a sure remedy and excess of moisture is the cause. But stop, Mr. L. sowed a different kind of wheat—the genesee flint—and his land was underdrained and it is full of

smut. Thus from a single fact he, like the former, jumps to a conclusion as to the cause and the remedy. It cannot be denied that moisture aggravates greatly the disease from numerous facts collected during a series of years.

A fourth is a great man for insects. He believes fire-blight on the pear, yellows in the peach, in short almost every disease that vegetation is heir to, is produced by insects; the *uredo-fœtida* or smut, is nothing more nor less than the hatching and feeding of numerous minute insects; he is ready to bring distinguished names in support of his favorite theory. A Mr. S. found upon some of these diseased grains an insect, in form like a wood-louse, which he said he knew from observation to be a species of *acaris* and these Mr. S. considered the undoubted cause of this disease. But this mere opinion, as it proves, has been refuted by searching observation and may be disproved by the general fact that the acaris and aphides and other minute insects feed more or less on all sorts of plants, whether affected by smut or not, and almost always abound on decaying vegetable matter or on plants which are diseased or in an enfeebled condition.

Still another alleges as the primary cause of the prevalence of smut the numerous imperfect grains which have been sowed; the embryo being in some way impaired a malformation is effected and a monstrosity is produced. But seed which is threshed and handled in the same way is not always similarly affected.

Another has no doubt that he has discovered the real cause, viz: poverty in the soil. He has heard of chemical analysis and is aware that certain ingredients are necessary for the full maturation of the grain. But this cannot be true because one year he finds a great deal of smut, while without manuring the next year he reaps a rich harvest.

Another—and how many more we will not attempt to enumerate—avers that it arises from fermentation occasioned from extra heat and humidity from without. If this were so it would account for its appearance only after the seeds begin to be formed, and if this malady is thus produced the question may well be asked, when it does occur why is it not more prevalent.

Thus while this most pestiferous malady has been attributed to organic weakness, wet seasons, fogs and hot sun, and to animalcule and other contingencies, all of which may aggravate the symptoms and accelerate the progress of the infection, it is due to science

aided by the microscope not only to confirm the refutations given to these theories which we have named and others that might be named, but to bring to the sunlight of a clear demonstration the true cause of smut—the *uredo-fœtida*. It is proved beyond question to be a parasitical fungus whose spores constitute the fine sooty looking fœtid substance which we find incased in the receptacle which covers the grain. The sporule of this fungus has been detected in the very earliest states of the flower-bud which, when fully ripe, occupies the whole interior of the grain pellicle. BULLIARD describes this fungus as globular, extremely fine and attached to a fine elastic filament or thread.

Mr. LATHBURY examined the dust of this fungus under a powerful magnifyer and found it consisted of numerous minute particles uniform in shape and size, much smaller and blacker than those of the pepper brand and less easily separable; they seemed to be contained in minute irregular cells.

M. BAUER in his researches says the earliest period at which he discovered the sporule within the cavity of the ovule of a young plant of wheat, was sixteen days before the ear emerged from the hose, and about twenty days before the sound ears, springing from the same root, were in bloom. At that early stage the inner cavity of the ovum is very small and after fecundation is filled with the albumen or farinaceous substance of the seed and already occupied by many young fungi, which from their jelly-like root or spawn adhere to the membrane which lines the cavity and from which they can be easily detached in small flakes, with that spawn. In that state their very small pedicles may be distinctly seen. At first the fungi are of a pure white color and when the ear emerges from its hose the ovum is much enlarged but still retains its original shape, and the fungi rapidly multiplying, many of them have nearly come to maturity, assumed a darker color and having separated from the spawn lie loose on the cavity of the ovum. The infected grains continue growing and the fungi continue to multiply till the sound grains have attained their full size and maturity, when the infected grains are easily distinguished from the sound ones by their being generally larger and of a darker color, and if opened they appear to be filled to excess with these dark colored fungi!

But the grains infected with the *uredo-fœtida* very rarely burst and these fungi are seldom found on the outside of the grain; but if a grain be bruised they readily emit their offensive smell, which

is worse than that from putrid fish. When the sound grains are perfectly ripe and dry and assume their light brown color the infected grains also change, but to a somewhat darker brown, retaining, however, the same shape which the ovum had at its formation, the rudiments of the stigma also remaining unaltered! Here we have a minute and no doubt truthful description of the origin, progress and final development of this fungus.

PROPAGATION OF SMUT.

It is estimated that the sporules contained in the space of a single grain amount to about four million, and these are easily distinguished and examined through a powerful microscope, and when thus seen have the appearance of articulated globules growing, as before stated, in a bundled manner upon threads. The sporules propagate the smut in the same general way in which seeds propagate phænogamous plants, and are so surpassingly minute as to be scarcely distinguishable under very high powers of the microscope, appearing then only like a faint cloud or vapor in a puffy escape from the spores. These sporules are so minute that they are readily received into the mouths of the spongelets and conveyed to the seed of the plant, their ultimate position and point of development before described.

"There is little doubt," says Mr. GEORGE W. JOHNSON, "but that the mode in which smut is imparted to the plant is by its roots imbibing the extremely minute seeds of the fungus along with the moisture of the soil; and this opinion is confirmed by the observation that the disease is most prevalent when the winter has been mild and the spring wet, for in such seasons the abundant moisture passing through the soil is most likely to convey the seeds to the mouths of the plant's radical fibres."

An experiment by Mr. BERKELEY, the author of Cryptogamic Botany, goes far to establish the above supposition. He immersed some seeds of wheat in water containing *bunt;* one of the first appearances was a curious mould, with peculiar spores that sprung upon the spores of bunt. The plants which came up from these seeds were evidently affected, but no communication whatever could be traced between the cells of these plants and the shoots thrown out by the spores. No intrusion whatever of the mycelium developed by the bunt spores into the wheat could be discovered. This shows that the fine contents of the spores do propagate the fungus. It has been often propagated by rubbing seeds before sown with the black powder of the fungus.

We have been made aware from various sources that smutted wheat on all kinds of ground is sure to produce smutted wheat, and that seeds thoroughly cleansed will not be affected by it.

HOW SMUT MAY BE EFFECTUALLY PREVENTED.

Various substances have been used with success to destroy the spores of this fungus, such as salt, quick lime, arsenic, corrosive sublimate, chloride of lime, sulphate of copper, etc.

Careful washing and a selection of good seed will, alone, prevent much mischief. The following recipe proved most effectual with us the past season.

Make a strong brine of salt and water, pour upon your wheat and let it stand three hours, then pouring off the liquid spread your wheat upon a floor and sift as much quick lime upon it as upon stirring will adhere, forming quite a coat upon the grain, and then sow. In a field of four acres level, heavy, wet ground, sowed with wheat liable to smut not fifty heads could be found ; while the same wheat sowed on the same kind of ground and in the same way, at the same time, without such preparation, was badly smutted.

At a meeting of wheat growers who had tried the same experiment, convened in this county a few days since, they reported a like salutary result from the use of the above pickle and lime; and we doubt not this simple precautionary measure would have saved millions to our State the past year.

UNITED STATES AGRICULTURAL SOCIETY.

The premium list of this Society, whose annual exhibition commences on the first of September and closes on the 5th, at Louisville, Kentucky, is published in the papers of that city. A telegraph office is to be established on the grounds, so that messages can be transmitted to and answers received from all parts of the United States. Other arrangements have also been adopted to render the exhibition superior to any ever before held. The premiums are on a most liberal scale, including thirty-two of $1000 each, and many of $75, $50 and $25 each.

FROM TALPA

CHRONICLES OF A CLAY FARM.

CHAPTER I.—THE WASTE.

MUCH as may be learnt, by a willing mind, from the wisdom of others the most practical and (shame upon us!) the most attractive lessons seem always to be derived from their failures. It is too late, in the natural history of the "biped without feathers that laughs," to stop and inquire into this little item from the list of his peculiarities; so I shall take it for granted in the most practical and amiable way in which it can be at once assumed and applied; and like the self-devoted bird that plucks its own breast to feed the young brood, open up my early farming blunders to the instructive gaze of those young and ardent agriculturists who are just beginning to recognize the last of human Sciences in the first of human Arts, and to "only wish, like duteous sons, their parents were more wise."

I shall not tell when it was, nor where it was, nor why it was, that I first "broke ground:" the first would be too cruel, the second too particular, and the third too personal. But I shall describe my farm geologically and myself categorically, which must answer every proper inquiry of the curious, and will leave a little untold besides, which serves the better to keep alive the interest of the narrative.

Somewhere or other in England there is a flat, bleak, high-lying district, which a shallow or very terse geologist might haply describe as part of the New Red-sandstone formation; but where, if he would take the trouble to plow an acre, he would hear now and then a suspicious kind of sound from the share and colter, which I may describe by the word "soapy;" and where, whenever the nose of the plow chanced to dive an inch deeper than usual, he would see certain blue-looking indications turned up, that would rather startle his complacency, if a lover of light soils, by a suggestion of the proximity of that terrible antagonist—the blue lias.* Should this discovery

* "Lias" is the geological term for various strata of marl, shale and other deposits below the surface. These strata often contain conglomerate, or mixture of shells, lime, alumina, silex and iron. The Blue Lias, as in the text, contains iron and lime, possessing the property of "setting" under water. Scarcely any deposit beneath the surface, within range of the plow, can be more unwelcome to the farmer as affecting the permanent fertility and improvement of his soil. It is a favorable consideration that deposits of lias are not frequent in American soils.

stimulate further exploration, and his plow be set a couple of inches deeper his ears might presently be regaled with a sound as of a heavy-laden cart dragging over a newly-graveled road; and after turning up a variety of conglomerates, as compacted as the bed of an old Roman causeway, and as many-colored as Harlequin's coat, the stress of the pull would suddenly be eased and the plow be heard swimming whisperingly through a bed of wet sand; and just as the filler-horse was congratulating himself that it was all plain sailing now bang goes a trace or spreader and the plow comes to a stand-still, just revealing at the share-point the bruised side of a quartz-pebble, as big as a foot-ball, grinning at you from its tight nook in the bed of the furrow.*

Have I described enough? or shall I add to this subsoil sketch a faint and feeble idea of the surface some time about the month of February (surnamed "fill-dyke" not without reason), and endeavor to paint the hopeless, currentless, resourceless and pitiable condition of water whose unhappy fate has fallen or melted upon fields as flat as a billiard table, and without even a "pocket" to run into for escape or concealment? There it would stand, day after day, and week after week, and month after month, shining along the serpentine furrows as if it never, never, *never* would go again! And the only wonder was when or how, or by what bold amphibious being the ridges had ever been raised which it intersected, like a sample series of Dutch canals and embankments.

This was my Farm: 250 statute acres!

"*Why did you take it?*"

I didn't. *It* took *me*. That "mysterious lady" who is painted with a bandage on her eyes (but she can see as well as you or I), made it, with a pat on the back, my property, and shortly afterwards with a slap in the face, my "occupation." It had been performing for a series of years a sort of "geometrical progression"—downward. Each incoming tenant took it at about half the previous rent; dabbled

* A graphic description of what many a young farmer may encounter in his first efforts at subduing a naturally forbidding soil. Where, however, the elements composing it are geologically good, although lying incongruously beneath the surface, the unpromising aspect of the newly-turned earth should be no obstacle to his perseverance. Some of the most productive farms within our knowledge have been reclaimed from lands, time out of mind, considered even by good cultivators worthless and eventually brought into cultivation through the aid of a scientific analysis determining their composition and the application of improved methods of draining, to throw them into proper condition for the plow.

about for a year or two like a duck, and retired—"*lame.*" It was but a simple equation—a very simple one—to say when the rent would come to zero. It looked on the rental-book like an annual sum in reduction; *facilis descensus Averni*, literally translated into plain English. What was to be done with it? This brings me to to my proposition No. 2: which is in fact what is commonly called "No. 1"—myself. If there was in the catalogue of human pursuits one which I hated and feared, dreaded and despised, didn't know, didn't wish to know—it was that strange, incomprehensible, infatuated, damaging thing which, from my cradle upward, I had heard described and deprecated under the almost forbidden name of—Farming. Dr. Johnson calls it the delight of destiny to counterchange the plans and purposes of man; but some other wise man, I think it is Lord Bacon, tells us to "choose the life that is most useful and habit will make it the most agreeable." But accident seems more potent than destiny, plan, purpose, choice or habit. On a long sea-voyage, and in a rather dull and resourceless foreign land, three unbidden companions had stuck by me with an almost persecuting tenacity and attracted first my acquaintance, then my intimacy, for sheer want of anything else: they were books: to wit, Cobbett's edition of Tull's Works, and the Useful Knowledge Society's two volumes on British Husbandry. I read them and re-read them; and then began again: for nine mortal months I was reduced to gorge my literary appetite upon these husks, as I at first regarded them. The Georgics of Virgil had begun and ended all my previous acquaintance with farming; they were the sole associating tie that connected me with this sudden and enforced onslaught upon the "theory and practice of Agriculture," and I returned to England—poor wretch—in worse condition than I went—in fact given up by the "Faculty" as a confirmed—*Book-farmer.*

With this morbid predisposition upon me—imagine me exposed unexpectedly to the fatal atmosphere of a sick room in which lay a dying man, as he devoutly believed—a land-steward—stricken with influenza, caught upon the *marsh;* imagine the reports, the lectures, the death-bed warnings I had to sit and listen to, about this blessed farm! He described it as you would a pestilence; a terror to all around; it must be cured (or killed?) not for his own sake, but as you would treat a diseased ewe, or a truss of mouldy hay. It was painful, yet ludicrous, to hear him, for he talked like a dying man of a bad child—that would "be sure to come to harm some day or

other." What on earth *was* to be done? Agriculture was not royal then—there was no "Society's Journal;" no motto-laden buttons publishing the bans (for the first time), of "PRACTICE WITH SCIENCE;" no dear little weekly *bonne bouche* of a *Gazette*, no July gathering of fat cattle and great men to look backward and forward to all the other twelve months. All was dull, blank and cheerless, not to say "flat and unprofitable."

What was to be done? Apostatize from all the promises and vows made from my youth up and take it *in hand*—that is, in a bailiff's hand, which certain foregone experiences had led me to conceive was of all things in the world the most *out of* hand (if that may be called so which empties the hand and the pocket too). Such seemed the only alternative. At first it was an impossibility—then an improbability—and then, as the ear of bearded corn wins its forbidden way up the schoolboy's sleeve and gains a point in advance by every effort to stop or expel it, so did every determination, every reflection counteract the very purpose it was summoned to oppose, and, in short, one fine morning I almost jumped a yard backward at seeing my own name *on a wagon!* *

* We have known more than one man to sell out his "homestead," lying within a few miles of a populous town in an eastern State, because there was too much "swamp" upon it and remove several hundred miles to the west, where he must for years combat the embarrassments of a new country, to settle himself on land intrinsically worth less, for productive purposes, per acre, in its best condition, than the repulsive swamps which he had left, simply because he was ignorant of the simple process of draining them. Such men were no "book farmers." They ignored all connection of science with agriculture, by way of agricultural publications, or the association of themselves with agricultural societies, and consequently were profoundly ignorant of the existence of a mine more valuable than California gold in the hateful morasses which had driven them away. Had they been reading and inquiring men they would have converted such worthless swamps, at a comparatively trifling expense, into soils of the most productive character. The quiet vein of satire running through our author's remarks is strikingly illustrative of the populor errors which prevail among ordinary farmers in relation to swampy lands.

A Sketch—Introductory.

WHEAT AND WHEAT CULTURE.

THAT a more thorough and improved cultivation of this *princely cereal* should be urged upon our farmers must be universally conceded of paramount importance. In an economical point of view this crop with Indian corn may be regarded as our first staples. Let but a single wheat crop fail and our merchants are bankrupt and the people are without bread. Any measure or mode of culture which in its adoption will increase this staple crop but a single bushel to the general average per acre would be of immense national importance. And that this amount may be realized by information now in possession of many of our farmers if adopted, we have no manner of doubt. America is capable of becoming the granary of the world with a greatly increased population over the present. The extent of the wheat districts of this continent are literally boundless; the greater portion of which still await the hand of man to bring them into cultivation. The valleys of the Mississippi, Missouri and Ohio alone, if brought into cultivation, are probably capable of supporting a population equal to one-half of all the inhabitants of the world; and in the southern hemisphere there are boundless tracts of land where the climate and soil are all that can be desired for growing wheat of the finest quality. Although probably indigeneous to the more temperate climate, wheat like man, which it was evidently designed to feed, is a cosmopolitan and lives through the severest winters of the north of Europe while on the other hand it thrives under the burning suns of the torrid zones. Its habital is by far wider and more extensive than that of any other cereal, a palpable proof that it was intended by infinite wisdom to form the principal and peculiar bread-food—*the staff of life*—of the human race. This is more fully confirmed by the fact that few animals relish wheat in any form and invariably prefer oats or barley if a choice be given them, and these latter grains when used as the principal food of man are accompanied by effects highly detrimental to health. Such being the importance of this cereal, and such a patrimony being ours for its production it becomes us as a nation to husband them, and as political economists to guard well against the improvident waste and exhaustion of the soil which produces, and so cultivate as that quantity and quality of yield, shall everywhere and in all respects be improved.

It is true of many portions of our country where wheat was formerly raised in abundance that now not a bushel is or can be produced, and of others where it was a remunerative crop the inhabitants have been compelled to resort to some other means of support, and large tracts are turned to *common* where nothing but a stinted sour grass will grow, formerly yielding large crops of both wheat and tobacco. Our fathers landing on the eastern coast of this continent and finding, as they supposed, a soil of inexhaustible fertility and of boundless extent, commenced their destructive method of tillage. The forests have melted before them and now the tide of population has increased to such volume that like an army of locusts they are threatening to lay waste every green thing, leaving a desert in their track. There are perhaps at this very time more crude notions, fanciful theories, and unauthorized practices adopted in the cultivation of the soil than in any other pursuit. The first great effort is and has been in all cases to secure the largest present return with the least possible expense, entirely reckless of the future, under the specious and *wicked* plea, there is plenty more land west when this shall be exhausted; and since railroads have been inaugurated it has indefinitely increased the capability as well as the inclination to augment this vandal waste.

Science! There is no such thing in our Agriculture! naught but uncertain, indefinite practice—mere tradition. The father planted or sowed in such a way, and the son implicitly follows. We will review a few of the various notions in relation to wheat and wheat culture in our country, and endeavor to give some plain directions as we proceed.

If the kind of wheat is the subject one prefers the old red chaff, bearded or bald as the case may be; another the blue stem; another the Mediterranean; another the white Genessee, etc. Why is this? Often simply because they have *happened* to succeed better with this or that kind the first time sowing, than with some other and it may be far better variety. True some soils suit certain kinds of wheat better than others, but this is not the more common criterion for the choice made. In most cases the reasons assigned are capricious and unfounded, and resolvable into ignorance of the proper qualities both of grain and soil, and here no blame should be attached to any one more than to him who knowing better, treats agriculture as a very simple art when in reality it is one of the most profound of sciences. That our farmers may have full scope for their choice

as to kinds, we have experimented with about equal success the past season with over forty different sorts of wheat, a tabular view of which with remarks, etc., is appended to this article. But we say unhesitatingly where the soil is any way suitable, choose a wheat with a thin transparent bran in preference to a thick dark one. Wheat with a light colored pellicle will bear a better price in any market than one with a dark skin. Indeed the thickness of the pellicle may generally be known by the color; the white wheats are uniformly the thinnest. The WHITE PIRK or PURKEY for all kinds of soils is by us deemed the best.

The next point of importance we notice, and one also upon which great contrariety exists is, as to the time of sowing. One thinks that early sowed wheat is more subject to the fly; another cares not so much about the fly as the spouting out in the spring by alternate freezing and thawing, and you cannot have it too early for him for he wants his wheat well rooted, besides late sowed wheat is sure to smut. Here we have (ironically speaking), most cogent reasoning and that too supported by some of our agricultural papers, and we presume it will continue to be so as long as men's experience differ so widely, and the manner and extent of observation is such that the *true causes* of failure or success are not the ones marked and appealed to. Experience is uniformly in favor, all other things being equal, of sowing fall wheat in this latitude during the month of September. It may be sowed with success in October, but rarely later for the simple reason that it should tiller and root well before winter, especially is this necessary where the cultivation generally adopted among our farmers of plowing or harrowing in is pursued; and here of this practice of putting in wheat and of the proper depth at which wheat should be sowed, we would say that these points are the subjects of more of what logicians call logomachy (literally a war of words not argument), than any other.

And here as we will endeavor to show by argument, explained by diagrams, *that in common practice* (if there is any such thing), all the laws of vegetable growth and development are most clearly violated. Where shall the seed be lodged? Answer of the books and common practice.

Mr. A. Plow in your grain to the depth of from three to six inches, otherwise it will winter kill.

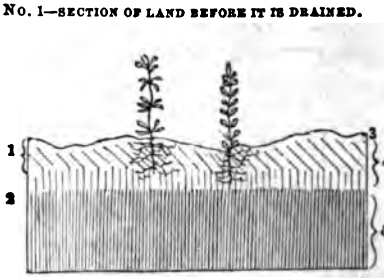
Mr. B. Plow first, then harrow it in with a good heavy harrow; if necessary load your harrow. Mr. C. is captivated with the drill and

thinks it the "*ne plus ultra*" in wheat growing. Mr. D. says no odds how rough you leave your ground he has found that the melting away of the lumps in the spring is a great protection to the bare roots; the rougher you leave the surface the better. Mr. E. is utterly opposed to neighbor D., and says that after harrowing fine, the lumps should be broken with a heavy roller, and so on to the end of the alphabet.

This may serve as a specimen of *our science* of agriculture; to record every freak and fancy in the cultivation of our wheat crop would fill a volume, and certainly to very little purpose, so far as correct or any definite practice is concerned, and he who has an agricultural library before him will be found stupidily to stand in doubtful maze, after reading their record, how he is to proceed with any degree of certainty.

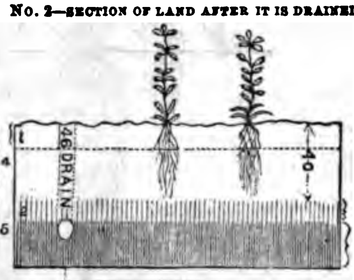
Now if any physiologist will inform us why he would bury his wheat deeper than half an inch beneath the surface we should be pleased to have his arguments. We know the farmer has his and will have them when we are done, and though "vanquished will argue still;" but science can develop no more obvious truth than this, and we are assured by most obvious tests in our experience that practice will confirm the same as most correct and proper. To illustrate our views in relation to the proper preparation of ground, draining, sowing, subsequent growth and development of seed, we introduce the following cuts:

NO. 1—SECTION OF LAND BEFORE IT IS DRAINED.



1. Surface Soil. 2. Water Table.
3. Water of Evaporation.
4. Water of Capillary Attraction.
5. Water of Drainage or Stagnant Water,

NO. 2—SECTION OF LAND AFTER IT IS DRAINED.



1. Surface Soil. 2. Water Table.
3. Water of Capillary Attraction,
4. Water of Drainage or Stagnant Water.

If the ground is not properly drained it will present the appearance of cut No. 1, and if wheat be sowed as ordinarily or shallow, either early or late, in such ground it will spout out by the frost; and if sowed in soil prepared according to cut No. 2 this sad casualty

will in most cases be prevented. It is not the depth at which seed is lodged that prevents the grain from spouting out. It arises from the amount of moisture present in the soil.

How deep would it be secure against such casualty do you suppose, Mr. Farmer?

It must be, certainly, below the frost, say in this country some twelve or eighteen inches; for let water find its way into the fissure of a rock to almost any depth and there be frozen it will oppose and triumph over any amount of resistance. Certainly then if the pliable earth be filled with water to any depth the thawing and freezing must eject whatever is placed within its range; then nothing can save a crop of wheat from being thrown out as long as the surface and subsoil both remain undrained.

No. 3.

You have before you clearly the condition of your plants when sowed in ground prepared according to cut No. 2, and if good soil

be prepared thus and the seed be properly sowed we will insure in all ordinary seasons a good crop. In cut No. 3 you have clearly presented the situation and progressive growth of your plants when the wheat is lodged at the surface, as likewise when placed at the depth of from three to six inches, the uniform depth recommended by all our standard works on this subject. A different philosophy has sprung up within a few years, and we recently saw one work recommending from an inch and a half to two inches. (This is better.)

If the soil was free to the depth of five feet Figs. 1, 2, 3 and 4 would represent the depth and form of the fibrous roots, the descending axis, equal to the ascending. Fig. 5 shows the condition of a plant sowed to the depth of from three to six inches, though at six we would say in all clay soils wheat will not vegetate. And here we would rectify a very common error: when wheat is plowed or harrowed in, it for the most part does not exceed three inches, and if so it never sees the light of day. Fig. 6 shows the condition ordinarily in spring of the grains that have been sowed deepest; consequently the deeper you sow your grain, all other things being equal, the worse it will be killed. "Oh, no," says one of our learned savans, "for then it has two sets of roots instead of one." Not knowing that the plant, to escape the prison in which it had been placed and to find its own proper elements, reaches its plumule to the surface, in accordance with Fig. 5, and then forced by circumstances throws out adventitious roots, and thereby becomes independent of its parent seed, when all the roots developed therefrom become carious and slough off. Here in an enfeebled condition it emerges, develops a few roots, a spindling stalk and a small and often illy-filled head, and this constitutes your crop. Hence the necessity of from one and a half to four bushels of grain, when if properly sowed one bushel is far better. What an immense saving!

"All this is very good but it will not do in a *dry season!*"

Place your eye on cut No. 1 and see the situation in a dry season of land plowed as ordinarily. Where is your moisture three inches or two inches, or one inch below the surface? The soil is as hard as a brick-bat; if you have any moisture it must be at the surface arising from dew. Then you of course should place your grain at or near the surface. But you never know what the season is to be; according to our method it is best placed at the surface under all the circumstances of wet or dry seasons, deep or shallow plowing, for good

reasons which your own good sense will suggest by studying these diagrams and comparing with facts coming under your own observation. The evils arising from the deep sowing of our wheat are more serious than from any other. We exhibited before the Cincinnati Horticultural Society, about a year since, the difference in the weight of product of a seed placed to the depth of two inches and one at the surface, after six weeks planting, and there was the astonishing result of 8 to 1 in favor of the latter, and at the time of harvest of thirty, to two thousand in an extreme case. This is at first startling but it is nevertheless *fact.*

DIAGRAM OF WHEATS ON EXPERIMENT AT COLLEGE FARM.

When sowed.	No.	Name of wheat.	Where obtained.	Quantity.	Remarks.	When ripe.
Sept. 23	1	White Pirk,	Mr. Wardell, Cheviott,	⅛ bush.,	superior white,	12 July.
"	2	White Genesse,	Rochester, New York.	bush.,	fine,	12
"	3	Polish,	U. S. Patent Office,	1 pt.,	damaged seed.	—
"	4	Sweedish,	" "	1 pt.,	bearded fine, dark,	18
"	5	Turkish Flint,	" "	1	fine grain,	18
"	6	" "	Mount Olympus,	1	" "	18
"	7	Triticum Hunter's,	Pat. Office, England,	1 gill,	beautiful,	19
"	8	" Sationanter's,	" " "	⅛ gill,	not filled.	19
"	9	" Album,	" " "	⅜	superior,	16
"	10	" Brawick's,	" " "	1	good,	17
"	11	Wooly eared,	" " "	1	not well filled,	18
24	12	Prince Albert,	" " "	1	" " " fine wheat,	18
"	13	Kesingland,	" " "	¾	" " "	18
"	14	Triticum,	" " "	1⅛	winter-killed,	19
"	15	" Spalding's,	" " "	¾	" "	19
"	16	" Nurens',	" " "	1	not well filled,	20
"	17	" Hardcastle,	" " "	⅞	" " "	20
"	18	Golden Drop,	" " "	⅜	failed,	—
"	19	Triticum (prolific),	" " "	⅞	well filled,	16
"	20	" Lamas Red,	" " "	1	fair,	16
"	21	Taunton	" " "	⅛	winter-killed,	—
"	22	Nursery Wheat,	" "	225 grains,	not filled,	—
"	23	Red Chaff,	" " England,	⅛	failed,	—
"	24	Triticum,	" " "	⅜	fair,	17
"	25	Froment Blanc Talivera,	" " Ireland,	¾	"	16
"	26	" " "	" " England,	⅛	"	16
"	27	Fenton,	" " "	1	winter-killed,	—
"	28	Froment Rouge,	" " Ireland,	1	" "	—
"	29	Ecosse Ble,	" " England,	⅛	fair,	17
"	30	Triticum (spring),	" " "	1	failed,	—
"	31	Froment Rouge,	" " Ireland,	⅛	fair,	17
"	32	Geja,	" " England,	⅜	fine,	16
"	33	Soule,	" "	1	good,	16
25	34	Algerian,	" "	2	"	16
"	35	Pithusian,	" "	⅜	"	18
"	36	Gale,	" "	⅜	not filled,	—
"	37	Turk. flint from Mt. Olympus,	" "	2	good,	18
"	38	Early Noe,	" "	1	fair,	18
"	39	Hamath Wheat,	Homms, Syria,	95	failed,	—
"	40	Blue Stem,	Pomeroy, Ohio,	⅜	good,	16
"	41	Mediterranean,	Home,	1 qt.,	" well filled,	12
Nov. 6	42	Blue Stem,	Patent Office,	⅛	did not fill,	—
"	43	Cat Mountain,	" "	⅛	" " "	—

4 other kinds from Palestine did not vegetate.—Sowed too late.

You here have our views plainly expressed on the subject of the cultivation of our soil generally and especially in relation to our great cereal, wheat. If we are mistaken in them we will be as free to retract when we are convinced, but before retraction we must have demonstration and that united with practice. For mere dogmatism, which we so often hear upon these subjects, and what Mr. A. B. and C. have effected in their way, with the loosest analysis of facts, we utterly repudiate.

Practically and in conclusion we say then, as far as possible, prepare your soil of proper composition, according to cut number two; sow your seed as described, figure one, cut number three. Sow in the month of September, after harrowing smoothly the surface of your ground, previously stirred to the depth of twelve inches or more. Sow from one bushel to one bushel and a peck of well selected wheat of approved white pellicle, then bush or harrow lightly and roll. Your work is done and you have nothing to do but to wait the dews and sunshine to reap a rich harvest.

Above we give a list of wheats, recommending the first named as best, from present limited experience. Most of the kinds received from the United States Patent Office were in small quantities and the ground upon which they were sowed was not the most favorable. Many of them will doubtless prove valuable kinds, yet we think none can surpass the White Pirk, a testimonial in favor of which, with some valuable remarks from a successful cultivator, will be found in the present number. We shall have most of these wheats on exhibition at our State Fair, when we will be pleased to see our farmers and talk with them face to face on this and other subjects.

OUR STATE FAIR FOR 1857.

THIS will open on the fifteenth and close on the eighteenth inst. The preparations for this great Annual festival noticed at length in the August number, are well nigh completed. These are in a style and to an extent surpassing all former precedent.

We trust our Farmers, Gardeners, Fruit-growers, Mechanics, Artists and Artizans all, will be fully and fairly represented, and have on that occasion fair weather and fair faces, and a good time generally.—ED.

MOUNT AUBURN YOUNG LADIES' INSTITUTE.

WE present our readers, in this number, with a spirited lithographic sketch of the new building erected on Mount Auburn for the Young Ladies' Institute in that place, and which commands one of the most strikingly beautiful views in the neighborhood. Although we naturally feel a deeper interest for our own excellent Female College in this vicinity, we nevertheless, as friends of education in general, can not but regard with kindly sympathy all well aimed efforts at increased facilities and improvements. The education of the people on the most thorough and enlightened principles, and no less of the female than of the male portion of that important aggregate of all that may endanger, or secure, our national stability, can never be a topic of indifference to a patriotic mind. We believe the proprietors of the Mount Auburn Young Ladies' Institute are doing the public good service by thus providing a seminary which, we are assured, it is their intention to make as perfect, of its kind, as the means attainable in this country will permit.

The scope of their design and the abundant funds which, from their unhesitating expenditures, appear to be within their reach, are tending towards a style of public education that has not, we believe, unless in a very limited degree, been before attempted in the West. For it will, as we judge, be not incorrect to designate this seminary as a select school. The pupils it appears will be limited in number much below the standard of our largest public seminaries; will not be crowded in the sleeping apartments; and will be provided with the best teachers to be found in the country—the system of cheap teaching being utterly repudiated will aim at no showy progress inconsistent with perfect thoroughness in fundamentals—while the living and domestic arrangements in general are designed to be such as shall entirely satisfy the wishes of the most solicitous parent. To accomplish this without loss to themselves the proprietors have set their terms higher than usual in this part of the country—but to those who prize the advantage of a select school and desire to pay for it, $300 for board and the usual English classical and scientific branches is by no means exorbitant. If the plan proposed be fulfilled, and the character of those interested is a sufficient pledge that it will be fulfilled faithfully, we do not doubt that within the limit the Mount Auburn Seminary needs for its support there will be found sufficient patronage for a school of this class, and we heartily

wish the new Institute success and a long continuance of the honorable name it has already earned among the female high schools of Ohio.

We subjoin a table of officers, teachers and references :

TRUSTEES:

INSTRUCTORS :

REV. E. A. CRAWLEY, D. D., President, Prof. Latin, Greek and Moral and Intellectual Philosophy.

H. T. CRAWLEY, A. B., L.L. B., Mathematics, Algebra and Natural Sciences.

MISS H. M. FARLEY, Composition, History, Geography, Physiology.

MISS C. MENZIE, Latin, Penmanship, Grammar, Reading.

F. S. CRAWLEY, Esq., French and Drawing.

REV. P. W. BICKEL, German.

PROF. ROBERT KIDD, Elocution.

MRS. A. S. HANKS, Music.

PROF. CHRISTIN, M. D., Callisthenics.

MRS. L. BURPE, General Superintendance.

REFERENCES.

REV. IRA CHASE, D. D., Boston, Mass.

REV. A. CASWELL, D. D., Brown University, Providence, R. I.

REV. T. J. CONANT, D. D., Rochester Theological Seminary, N. Y.

RIGHT REV. MANTON EASTBURN, D. D., Bishop of Massachusetts.

HON. W. Y. GHOLSON, Cincinnati, Ohio.

REV. W. F. HANSELL, " "

REV. S. W. LYND, D. D., Theological Seminary, Georgetown, Ky.

RIGHT REV. CHARLES MCILVAINE, Bishop of Ohio.

R. D. MUSSEY, M. D., Cincinnati, Ohio.

REV. E. A. PARKE, D. D., Andover Theological Seminary, Mass.

REV. JOHN PIERPONT, Medford, Mass.

REV. JOHN PRYOR, D. D., Cambridge, Mass.

REV. E. G. ROBINSON, D. D., Rochester Theological Sem., N. Y.

REV. JARED SPARKS, D. D., Cambridge, Mass.

REV. B. SEARS, D. D., Prest. Brown University, Providence, R. I.

ALPHONSO TAFT, Esq., Cincinnati, Ohio.

REV. F. WAYLAND, D. D., Providence, R. I.

REV. W. R. WILLIAMS, D. D., New York.

ASSOCIATED EFFORT—AGRICULTURAL FAIRS.

ACTIVITY is the law of life for the race of men, as well as for the atom on the one hand and the planet on the other. *Rest* is the attribute of *death alone.* And whether we maintain the perfectability of man or not, we know that he possesses the elements of progress, and, blind as we are, have no difficulty in discovering that as yet he has taken but the first steps in the grand march of the ages.

For six thousand years or more, he has been feeding on the pap of GOD's providence, developing the bone and sinew, muscle and brain with which, in the manhood of his strength, he will realize to the world the hope of the race—the actual, and even greater deeds than hitherto we have been wont to ascribe to the false gods of mythology. Just now beginning to be conscious of his power he already seems a very Titan. See how he levels or bores through the mountains of limestone or granite, and fills up the deep valleys that his pathway may be easy and unobstructed—how he disembowels the earth for the iron with which to belt the continents and pave the world's great thoroughfares—how he builds great cities in a day, bridges, rivers, lakes and seas—how he puts the very elements into harness of steel and drives them as his chariot steeds! Then let us not talk of limitations, but rather resolve anew to become an essential element in the great world's progress.

But what is the grand secret of this century's success as compared with the past? Doubtless too much can hardly be ascribed to the inductive philosophy under whose influences all the material sciences have been so rapidly developed; and yet we claim almost as much for the equally important discovery of the potency of *Associated Effort.*

"In union there is strength," is beginning to be as true in *fact* as in theory. Carlyle may ridicule and anthematize as much as he will the "mechanical character" of the age—and pigmy ascetics in saintly garb may whine over it as a monstrous vice of the times—it is this mechanical characteristic to which should be ascribed the rapid growth of mankind in that great civilization which is the harbinger of the "good time coming;" and the world's mightiest achievments will not appear until the whole human family shall have been

organized into one vast machine, working with the nicety and and regularity of the watch, and moved by the one main spring of a mighty and persistent will, to elevate man to that higher plane of intellectual and moral life for which GOD designed him at the creation.

Religion, Politics and Commerce have long recognized the value of Association, and finally *Agriculture*, the greatest of great worldly interests, is beginning to feel its importance and is fast becoming an *institution* as well as an art and a science.

Agricultural Societies are to be the civilizing enginery of the age. Under their influence community will be linked with community, nation with nation, as never before—the sterile plain and wilderness be made to blossom as the rose, and the whole world reap the peaceful fruits of a well-directed industry.

But every Society must have times and places when and where the individuals who compose it may meet, compare notes, and learn the results of oft repeated experiment, and stimulate each other to new endeavor. Now this is the office of Agricultural Fairs and already, though of recent origin, they have contributed more to our vigorous and healthy growth as an independent nation than will ever result from the influx of gold from California and Australia combined; for through the spirit of energy awakened thereby in the minds of scientific men and an intelligent yeomanry a multitude of facts and philosphic deductions have been garnered together, whose value infinitely transcends the whole material wealth of the country.

The simple *show* of the best developed breeds of stock, the highest results of inventive genius, and the best and largest products of farm and garden culture for the pleasure of the senses is not, by any means, the chief object—nay, it is the smallest part of it. The Fair is eminently an occasion of *thought*. It is not simply the husbandman's fruits and cattle and machinery that we see at the Exhibition—we also see the man himself, who is infinitely greater than all his products, and see the *very process* by which he succeeded. And thus it is that we obtain new and numerous contacts with those pure intellections which animate and move the world. A new ardor is kindled by the praiseworthy efforts of others; a new spur is added wherewith to prick the sides of good intent and a "noble emulation heats the breast."—*Wisconsin Farmer.*

WHEAT CULTURE.

Dear Cincinnatus.—Too much light can hardly be thrown upon the cultivation of this important *cereal*. The best variety of white wheat I have found is the "White Perk." I obtained the seed from Christopher Wardell of Cheviot. It was pretty badly infected with *smut*, but believing that smut will not grow I sowed it just as I got it. From this seed I reaped the finest wheat I had ever seen but there was among it abundance of smut. I was fully satisfied that the smut had gained upon the crop, it making much greater show then than it did in the seed. I was exceedingly pleased with every phase of the "White Perk" except the smut. I therefore set myself to work to find a remedy; so in the fall of '56 I carefully washed all my seed wheat, and while wet I dried it with quick lime and sowed immediately; my crop, came in last harvest most beautifully and so clear of smut that only two smut grains have been found after minute examination, in a crop of some eighty odd bushels.

Two of my neighbors had seed of me. One got wheat which I had washed for mill. He sowed it without further preparation; his wheat was very fine, and he professes himself well satisfied with his crop, but it was by no means clear of smut.

The other sowed his seed just from the barn floor, without either water or lime, and he is quite disgusted with the Perky wheat, believes it all a humbug, and says it was *half smut*.

From these three experiments we might infer that smut is an infectious disease in wheat, that water helps some, but lime effects a cure. I ought not to omit to say that these sowings were comparatively early; but mine I believe was the earliest of the three, being before the middle of September; the latest about the first half of October, if I rightly remember. It is also a remarkable fact that the last sowed fared the worst in regard to smut.

The same fall (1855) one of my friends sowed nearly a half-bushel of this same wheat, which he salted and limed very heavily but without washing: (*i. e.* removing the smut grains by water). He sowed extremely late—just before winter—his wheat was also badly smutted, and he is highly dissatisfied with his wheat—thinks it all a humbug. From this it is manifest that early sowing must also be a condition of cure of this infection.

I have now on this farm (Walnut Tree Farm), four experiments in the culture of wheat. Some 75 years ago smut made its first

appearance in England. A club of farmers went into experiments to find a cure, and they settled down upon the following: *Soaking the seed in brine, liming with quick lime and immediate sowing.* Salt is an expensive article in England; but so essential is this salting operation considered, that men will go nine miles to get the brine of the ocean in which to soak their seed wheat previous to its being limed and sowed. I have sowed near two acres with the salt and lime, as much in English style as possible.

Several years ago I was traveling in Morgan county, Ohio. My attention was arrested by some very red spots in fields recently plowed. I had not time to examine these spots geologically, but from their appearance at a distance I supposed this redness to be caused by the presence of iron in the soil. I made inquiry of the inhabitants: they knew nothing of the cause of this peculiar color, but they told me that on these spots wheat was always a sure crop; whatever diseases might affect wheat in other localities, in the red soil wheat was always right. The German method of sowing wheat then is to soak wheat in *copperas water* preparatory to liming and sowing. Copperas is a sulphate of iron. It is a soluble preparation of iron; and as such is easily made available to the growth of the young wheat plant.

It is no new discovery that the mineral element of all vegetable bodies is exceedingly small in comparison with the bulk of their solids. Hence it is possible that all the iron that wheat may need for its perfect development may easily adhere to the external surface of the parent seed; and hence again the propriety of finding what mineral element is needed in cultivation of any particular crop, and the comparative ease with which it can be supplied over and above any mere *manurial* agent; I have therefore sowed about one acre with the German method. My other two experiments are the old method of unprepared seed, and the simple washing and liming already described.

The above was written some months before harvest, but because I wished to report the actual harvest returns I have postponed forwarding it to your popular Magazine. All of my four experiments succeeded beyond my best anticipations. I could find no smut among that which was sowed without preparation—a very small patch by the way (about half a rod); the one acre sowed in the German manner I think exceeds any thing I ever saw. I had sixty-

three dozen on a piece of ground about four rods short of an acre, and our sheaves were very large indeed. The wheat sown after the English method was sown later and on poorer ground, and in far poorer tilth; but the return is highly satisfactory. I know not which to prefer, the German or English method. They are both good and under equal circumstances might probably be equally so. As it was, the German outdid the English method; but the cause for this might be found in the superior excellence of the soil on which the German experiment was made.

In conclusion let me say, I have found the White Perky (White Perk) the hardiest wheat to stand the winter of any I ever saw; its vitality is wonderful. It will recuperate after the severest handling of winter in a manner that is quite astonishing. I have no hesitation in saying that it combines more good points than any wheat known to me. Respectfully, B. W. WATKINS

CORRESPONDENCE OF THE CINCINNATUS.

THE tide of summer travel sets very slowly from Cincinnati in the direction of East Tennessee, by way of the Cumberland Gap. Indeed, I know not of one Ohioan except myself who seeks this cool mountain region as a summer retreat, or who retreats hither at any other season; yet it is a country of great natural beauty, abounding in wonderful scenery and natural curiosities. I came hither as a *naturalist*, with the design especially of investigating the vegetation of these mountains and vallies, nor wholly neglecting the geological phenomena of the journey. I need not say that my excursion has been abundantly successful in both these particulars. The rugged cliffs and precipices in which this country abounds, and the deep, cool ravines cherish many a specimen of floral beauty, rare and strange, and alas! still more rarely observed by any mortal eye capable of appreciating its characters or pronouncing its name. As I came in hither last evening, for instance, in the twilight, along the precipitous banks of the Cumberland river, the rocks were festooned at every cleft with the "Cumberland Blue-bells" (as I would call the Campanula divaricata), and the shrubs were blooming with the magnificent clusters of the "laurel" (as the people here call the Rhododendron maximum), and the snow-white flowers of Stuartia pentagynia and Clethra acuminata.

The route from Cincinnati to the Cumberland Gap is tolerably direct through Georgetown, Lexington, Richmond, London, Barbourville, etc.; distance two hundred miles. The road is smoothly graded to Richmond, thence through is exceedingly rough. Indeed, I had no conception before of the degree of roughness which a road might have and yet be passable, or in other words how rocky, steep, sideling, muddy or loggy a road might be without dashing your carriage in pieces. It passes *over* the mountains, hardly ever *around* them, and shows no signs of labor in the construction of four-fifths of the distance, and yet this great and magnanimous State imposes a toll of two or three cents to the mile upon every carriage which escapes destruction in its passage through these gates! No wonder that the tide of travel avoids the State of Kentucky. The dwellings along the road being few and remote, almost all are from necessity *inns*, and the traveler will find comfortable accommodations (save, perhaps, in the matter of geese-feathers), and generally his bill is exactly double his bills in the State of Tennessee. More frequently, however, in this latter State the traveler's calls are set down to the account of a generous hospitality.

The Cumberland River, at this place, is bordered by two noble mountain ranges whose cliffs are here sure nearly 2000 feet high and almost seem to overhang the water. There is a point a mile or two above this ford where the Cumberland evidently did once force its way through one of these mountain ridges. Towering cliffs of naked rock on both sides of the river stand frowning opposite at the dizzy hight of near 2000 feet, exhibiting a scene far more bold and sublime than the "Passage of the Potomac" at Harper's Ferry, which the pen of Jefferson has so eloquently described.

The "Cumberland Gap" is truly a notable point in travel. It is in fact the only *gate* afforded by that lofty range between Kentucky and Virginia or East Tennessee. In that gap also is found the junction of three States (or within half a mile of the gap), viz: Kentucky, Virginia and Tennessee. Every railroad survey which has yet been made from Lexington or Cincinnati to East Tennessee has been laid through or under that gap, where it is generally agreed there must be a tunnel three-fourths of a mile in length; thence the nearest point of junction with the Chatanooga road is, I think, at Russelville. The importance of such a railroad both to the North and the South, and especially to *Cincinnati*, can scarcely be overestimated.

BOOK NOTICE.

THE Romance of Western History, etc. By JAMES HALL, Esq—APPLEGATE & Co., Cincinnati.

We always did love to look upon, and handle a beautiful book; such is the one before us. We have read it—it is "cleverly written," as Johnney Bull would say, and as are all the productions coming from the author of the "Legends of the West," "Tales of the Bride," etc. We love a book that reads "right along," not as though the author felt that he *must write a book*, or he should never be anybody, but as though he could not help writing it. His soul is full of the subject and it flows out as naturally and gracefully as water from a living fountain. Such is the one on our table—it is just such a Romance as is ever welcome to our fire sides—a Romance not fiction, but "stranger than fiction." On first reading the title we thought the subject a little hackneyed, and had we been there to have advised, such a work would never have been attempted at our suggestion; but after reading it, we were glad that we were not consulted in the case.

While the sketches of these earlier pioneers up the St. Lawrance, and in birchen canoes through the great Lakes and down the great father of waters, are fresh, and even new, the last fourteen Chapters, embracing the history of the Pioneers from the Eastern side of the Alleghanies—the Scotch Irish, and Kentuckians, and their early literature and, to this day, their marked characteristics—the cause of perpetual and perpetuated animosity between the so-called Border men and the Indians; are exceedingly rich in the philosophy of history. Some of these chapters are very suggestive, and go to show that the subject of early Western life is not exhausted—nay, it may be that we have but skirted the field, and honor is due that man who can by one additional leaf Supplement the annals of our only age of Mythe, Poetry and Romance.

It never before occurred to us that these border-rovers and real pioneers were a *peculiar race*, did not amalgamate with those who followed close upon their track, and since we are all bound for that Great Ocean whose waters lave the shore that marks the limits of our empire westward—and since like locusts, "that go forth in bands," we are determined to fell everything in our march;

and if, when that stopping place is reached, and we find we have made a clean sweep of it, no trout in the mountain-brooks—no fox on the hills—no deer in the wild-wood—no hen, and no flower on the prairies—and the last Indian has gone to the game-land beyond the blue mountains, because there is none on this side—then, yes then, *honored* shall be the man who will gather up the relics and transmit the annals of *our semi-barbarism* to a "better time coming."

C. N. M.

THE FARMER SHOULD BE A STUDENT.

It is a prevalent idea that a thorough scholar must follow a profession or pursue some sedentary employment, and that agriculture is not adapted to develop his intellectual powers, and it, in return, would recieve but very little benefit from his years of hard study.

The improvements in farm implements show that "knowledge is power," and experience proves that the scientific farmer is the more successful one.

The advantages the professions offer for improvement over those of agriculture are not such as will naturally lead the student to seek the former and avoid the latter. Vigorous bodily powers are necessary to the proper development of the intellectual. Manual labor will secure this, and much of the labor of the farm has the advantage of leaving the mind free to investigate those sciences of which the objects around afford practical lessons. The unfolding leaf and expanding petal are before the farmer, and invitingly direct his attention to the study of botany, which has a practical bearing upon his employment, and has those pleasures connected with it which repays the investigation, aside from its utility.

The swarms of insects which commit such depredations upon his crops of fruit and grain almost compel him to study their habits and mode of reproduction. The principles of natural philosophy, especially mechanics, the farmer to some extent must practice; how natural that the theory and practice accompany each other. Electricity, especially its effects upon vegetation, can be studied with interest and profit.

The science of Geology has at least a pleasant page of instruction on his own farm. The plutonic rock, sand-stone, conglomerate, and rounded pebbles, transported from their native beds, and worn by

the action of the drifting current, or whirling eddies mixed with the pulverized mass, now constituting sand, clay, marl, etc: the hills, valleys, plains and prairies direct the mind to the vast changes that have been necessary to render the earth a pleasant abode for man, and furnish a field for discovery.

There are yet mysteries in it, to be solved, as great as those already accomplished by HUGH MILLER, LYELL or HITCHCOCK. Nor need the artist turn in disgust from the plow; he may find time to cultivate a taste for the beautiful, and nature has spread all around him specimens for copying, varying from simplest lessons to a panorama which Art can never equal.

The Agriculturist may, and should find time to perform works of science and literature; his occupation should be a means and not the object of life.—*Agricultural Press.*

PRAISE YOUR WIFE.

PRAISE your wife, man; for pity's sake give her a little encouragement; it won't hurt her. She has made your home comfortable, your hearth bright and shining, your feed agreeable—for pity's sake tell her you thank her, if nothing more. She don't expect it; it will make her eyes open wider than they have for these ten years, but it will do her good, for all that, and you too.

There are many women to-day thirsting for the words of praise, the language of encouragement. Through summer's heat, through winter's toil, they have drudged uncomplainingly and so accustomed have their fathers, brothers and husbands become to their monotonous labors, that they look for and upon them as they do the daily rising of the sun and its daily going down. Homely, every day life may be made beautiful by an appreciation of its very holiness. You know that if the floor is clean, manual labor has been performed to make it so. You know if you take from your drawer a clean shirt whenever you want it, that somebody's fingers have ached in the toil of making it so fresh and agreeable, so smooth and lustrous. Everything that pleases the eye and the sense has been produced by constant work, much thought, great care, and untiring efforts, bodily and mentally.

It is not that many men do not appreciate these things, and a glow of gratitude for the numberless attentions bestowed upon

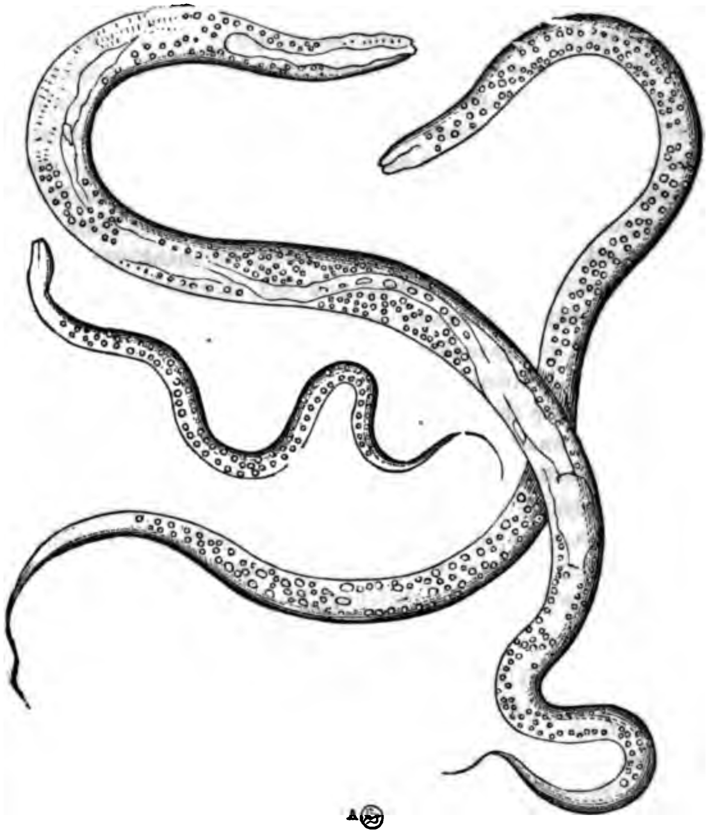
them in sickness and in health, but they are so selfish in that feeling. They don't come out with a hearty—"Why how pleasant you make things look, wife!" or "I am obliged to you for taking so much pains!" They thank the tailor, giving them "fits;" they thank the man in a full omnibus who gives them a seat; they thank the young lady who moves along in the concert room—in short they thank everything out of doors, because it is the custom, and come home, tip their chairs back and their hee's up, pull out the newspaper, grumble if wife asks them to take the baby, scold if the fire has got down, or, if everything is just right, shut their mouths with a smack of satisfaction, but never say, "I thank you."

I tell you what, men, young and old, if you did but show an ordinary civility toward those common articles of house-keeping, your wives, if you gave them the hundred and sixteenth part of the compliments you almost chocked them with before you were married, if you would stop the badinage about who you were going to have when number one is dead (such things wives may laugh at but they sink deep sometimes), if you would cease to speak of their faults, however banteringly, before others, fewer women would seek for other sources of happiness than your apparently cold sottish affection. Praise your wife, then, and you may rest assured that her deficiencies are fully counterbalanced by your own.

ANNUAL EXHIBITION OF THE CINCINNATI HORTICULTURAL SOCIETY FOR 1857.

THE gardners and fruit-growers comprising the Cincinnati Horticultural Society are determined not to be surpassed in any previous efforts of their own, or by others, at their Annual Exhibition, which opens on the 8th of the present month. While after much discussion and some feeling, it was thought by this Society, or the majority of it, to have their Annual Exhibition at the same time of the State Fair, yet it was their purpose it should be with undiminished interest and effort to make the State Fair all that it otherwise could be on their part; presenting the additional advantage of a pleasant place of resort for the crowd of citizens and strangers during the evening, when the State Fair would necessarily be closed. We have no doubt this Society will fully maintain her deservedly high reputation, for her rich, floral and pomonal wealth, as well as her taste and talent in their attractive arrangement and display.—ED.

ANGUILLULA ACETI.



THIS is the long name of those very minute animals found in vinegar and generally known as the "eels of vinegar." They may be seen by the naked eye if a glass of the liquid is held in a strong light, when they will appear like minute white threads, the larger ones about the one sixteenth of an inch in length, and in a wave like motion continually vibrating and mounting to the edge of the liquid. When placed in our microscope and a power of one hundred diameters employed, they appear of the size represented in the engraving, which exhibits two of the larger and one of the smaller eels. They were drawn by means of the camera lucida, and represent their exact form and dimensions as they appear when compressed

under a thin piece of glass to hold them still. Their bodies are transparent and exhibit distinctly their interior structure.

The small round particles, with which they seem almost entirely filled, are probably the cells of the vinegar plant, commonly termed "mother," upon which they subsist; the large irregular white spots are eggs, and these can be seen by the patient observer to hatch out in the body of the parent eel, and its infantile motions viewed. Several instances of this kind have been noticed where the perfectly formed young one was moving actively about throughout the entire length of its parent's body.

When the observer for the first time views a group of these animals thus magnified and briskly writhing in their snaky motions, he suddenly withdraws his eye from the instrument feeling a crawling sensation all over, and resolves he will eat no more vinegar; the idea of swallowing such hideous snakes alive is too much for any one's stomach. But it is not probable that they are unwholesome for they are found in all vinegar containing much mucilage, such as that made from cider. In that entirely free from mucilage none are found, for it is upon that they subsist, and not upon the vinegar.

The addition of sulphuric acid, which is sometimes made by dishonest dealers to give sharpness to a poor article, is fatal to these little animals. We have found vinegar in our market however that was very strong, entirely free from oil of vitriol, and not an animalcule in it. Such is probably the best and most wholesome vinegar.

It is the general impression that all the food we eat and the water we drink contains animalcule of some kind, but this is not true. Ordinary well water is free from them, and when an article of food contains them it is usually stale and unfit to be eaten; thus spoiled flour or sugar is frequently filled with them, and the stagnant waters of ponds and ditches, rich in vegetable matter, swarm with an almost infinite number of species.

In shape, mode of progression and general structure, most of them differ entirely from animals that can be seen with the naked eye. We will select some of the most interesting among them to be illustrated in a future number.

OHIO POMOLOGICAL SOCIETY.—A meeting of this Society is appointed to be held at Cincinnati, commencing on Monday, Sept. 14th, and continuing several days (or evenings), during the time of the State Fair.

CINCINNATI HORTICULTURAL SOCIETY.

(CONTINUED FROM PAGE 381.)

CINCINNATI, Saturday, July 13

PRESIDENT in the chair.

On motion of Mr. HOWARTH, the report of the Fruit Committee was ordered to be amended so as to read that the Ohio Everbearing Raspberry is "rather rich as compared with the common Raspberry."

Messrs FARRIS & HAWKINS, being desirous of taking heliographs of the fruit and flowers exhibited from time to time, were, on motion, permitted so to do, it being understood that no claim or charge therefor should ever be made by them against the Society.

The tables were beautifully decorated with fruits and flowers. Among the former were Apples, Pears, Cherries and Plums. Of flowers Mr. HOWARTH exhibited a remarkably fine Pink—the Perpetual—and the Cactus Reptans in most gorgeous bloom.

A flower-basket, by Mr. HERMAN HERLING, presented a most beautiful and attractive appearance.

REPORT OF FLOWER COMMITTEE.

The Committee are pleased to observe more beautiful specimens in the floral department than we have of late been accustomed to see. A splendid collection of Hollyhocks, of various colors, exhibited by HERMAN HERLING, gardener to Mr. LONGWORTH; also, a basket of flowers tastefully arranged.

Mr. HOWARTH exhibits fifteen varieties of Hollyhocks—the Althea, two of the Antirrhinum; of Roses—the Microphila, the Luxemburgh, Lyonaise, Noisettes (three varieties); also, the Perpetual Pink, the Cactus Reptans and the Yucca Fillimentosa.

This being the day for awarding premiums on Hollyhocks, the Committee award the first premium ($2), to HERMAN HERLING, and the second ($1), to W. HOWARTH.

J. P. FOOTE, Chairman.

FRUIT EXHIBITED.

By Mr. FERRIS—Holman's late Duke, beautifully rich mottled, red and yellow; Cherry, Currant and White Grape; a very fine specimen Houghton's Seedling Gooseberry.

By Mr. CONSIDINE—French Reinette Apple. Report corrected by stating that the Plums exhibited were unripe. *Plums*—The Orleans Seedling, Purple, Magnum Bonum, Prince's Imperial Gage.

By Mr. ERNST—*Plums*—A Seedling, Pond's Purple, Prince's Yellow Gage; and the Doyenne d'Ete Pear.

By E. HOOPER—May Duke Cherry.

REPORT OF FRUIT COMMITTEE.

Doyenne d'Ete Pear—Beautiful; a great bearer; always pure and fair; does very well on peach and quince stock; very good for an early variety; of good size and of fine shape. Seedling from Mr. R. STANFORD. Sells very well, probably on account of its good size, as its flavor is insipid.

French Reinette Apple—Very much injured by the curculio; of pleasant flavor; rather more acid than the White Juneating.

Holman's Late Duke Cherry—Not near so good as the Early May Duke; much more acid.

May Duke—early—Latest succession crop; fine; of large size, but not fully ripe. A peculiarity of the tree is for the fruit to keep ripening for a continuance of one month, at least.

Cherry Currant—Very large, but seems more acid than the Red Dutch at this time.

The Plums exhibited were found pretty free from the stings of the curculio. Some (Mr. Considine's), were syringed with a solution of lime and sulphur; and others (Mr. Ernst's), were grown in pavement, and near a house where there was much passing and repassing.

H. Brower (omitted in last report), two varieties of Gooseberry from Dr. J. English. One very large—not quite ripe—yellowish; the other rather smaller, but ripe; green color; delicious. They had been kept free from mildew by severe head-pruning. If this mildew does not attack the fruit when quite young it is not very injurious—it can be picked off; still we believe that there is no general and certain plan for the foreign Gooseberry to escape the mildew. Mr. J. C. Ferris states, however, that he has one of the English perfectly free but he has lost the name. It is one out of the three hundred varieties.

E. J. HOOPER, Chairman.

Under the order of "Miscellaneous Business" the members held a most interesting conversation in relation to the rot and mildew of the grape, in which Dr. Mosher remarked that the vineyards on the river bottoms were almost entirely ruined, as to the present crop, while the highland vineyards were comparatively untouched.

Mr. McWilliams stated that the Isabella is quite free from any disease; and Dr. Mosher also stated that in the midst of his vineyard he had about a half-acre of the Schuylkill (erroneously called Cape Grape), which were untouched, while around them the Catawba was everywhere affected.

The President read a communication from Mr. Longworth on the Strawberry, having reference to a theory held by one of the largest strawberry-growers of Pittsburg. On motion the communication was ordered to be filed and a committee, consisting of Dr. Mosher, J. W. Ward and W. Stoms, was appointed to take the same into consideration and report thereon. Adjourned.

Saturday, July 25.

On motion, the minutes of the last meeting were corrected so as to show that the basket of flowers, said to be presented by H. Heflin, were presented by Herman Herling, and that the same gentleman received the first premium of $2 for hollyhocks. They were then adopted.

A communication was read by Dr. Warder from John T. Hamilton, of Madison, Ind., in reference to furnishing seedling fruits to the Society. Referred to the Corresponding Secretary.

A letter was read from Mr. Stanton, of Richmond, Ind., saying that he had a number of young trees that had not borne; that he headed them in with the object only of changing the form of the tops, and was agreeably surprised to find that

the experiment had caused a large crop of fruit. He wished to know what time of the year was the best for this operation.

Mr. Ernst and Mr. Kelly thought July was the proper month.

On motion, the subject was referred to a committee consisting of Messrs. Kelly, Sayers and McWilliams.

Mr. Ernst, the President of that Society, announced that the Ohio Pomological Society would meet in this city next fall; and, on motion of Mr. Foote, this Society tendered to that Association the use of its rooms and of its hall, on the fair grounds, at the fall exhibition.

Mr. Kelly exhibited to the Society a branch of a pear-tree that had been killed by the fire-blight. He said he had trimmed the tree in the spring and it was healthy until about two weeks since; that Mr. Ward had examined the branch with great care with a powerful microscope and had not been able to detect any puncture, eggs or other traces of insects, neither had he been able to discover any fungus on it. That he wished particularly to call the attention of the Society to the fact that this branch was perfectly healthy and vigorous until the time he mentioned, so as to prove the incorrectness of the theory that it was occasioned by the frost of winter. He thought that it was produced suddenly by atmospheric influences and commenced on the outside of the tree; that the blight frequently, as in the specimen presented, struck the middle of the branch and spread both ways; whereas trees killed by severe winter are destroyed from the extreme end of the limbs.

Mr. Ernst thought the fire-blight caused by severe winters and sometimes by the sun. He said that when the wood of the tree had not matured in the fall, or when it had grown very rapidly in a wet spring which was followed by a dry, hot summer, it was much more likely to make its appearance. He agreed with Mr. Kelly that it was not occasioned by insects—that that theory had been abandoned by its former advocates.

Mr. Kelly, Mr. Sayers and Dr. Mosher thought that Mr. Ernst's theory was inconsistent with facts.

Dr. Mosher said that these same theories had been discussed in this Society four years since and until a much larger collection of facts had been gathered, it was impossible to say we knew anything of its cause; and, on his motion, the subject was dropped.

Mr. Ward suggested, for the investigation of members, three questions:—Whether the mildew is fatal to the grape? Whether it is found on the vine? and whether it is found on the root?

On motion, these queries were made the subject for discussion on next Saturday.

Mr. Ward suggested that the mildew might be one of the effects, or an indication only, of the disturbing cause.

Dr. Sturm exhibited the Kohlrabi Turnip Cabbage.

E. J. Hooper exhibited White Juneating Apple.

Mr. McWilliams exhibited Early Charmontelle and Madeleine Pears, Princess' Early Harvest and Early Chandler and Yellow Juneating (?) Apple.

J. D. C. Stark exhibited Houton Seedling Gooseberry.

William Evans, of Pleasant Ridge, exhibited the Warrior, Roaring Lion, Northern Hero, Slaughterman, Edward's Jolly Tar, Red Ocean, Houghton Seedling, Cheworth's White Lion, Berry's Greenwood, Brotherton's Pastime, Cook's Earle, Shaw's Billy, Samson's Queen Anne and Northern Hero Gooseberries.

WILLIAM HEAVER exhibited Currants; Red Dutch, Cherry and Red Grape.

W. H. PYE exhibited Prince's Harvest Apple.

Mr. PETTICOLAS exhibited the Benoni, Prince's Harvest, Red Streak, Summer Rose and Early Strawberry Apples and Madeleine Pears.

Mr. A. L. REEDER exhibited the Early Harvest Apple.

REPORT OF FLOWER COMMITTEE.

Mrs. MAXWELL exhibits fine specimens of Orleanders.

Mr. HEAVER exhibits cut flowers—Phlox, Baron de Merona, Ouge Gardien, Countess D'Chambord, Oeil de Lynx, Van Houttier, Ruben Compacta, Blanc de Neiulles, Candidissima Nova, Madam Aubyn, Camponella, Grandeflora, Delphinum Hendersonii, Sinensis Wheelen. Verbenas—Uncle Tom, Snow Ball, Madam Lemonnier, General Brea, Alice Howarth, Mrs. Reed, Queen Victoria; Clematis Flamuela or Virgin's Bower; Alstromeria, Pelegrina, Psittacina—French Boquet. Several of the Verbenas appear to be new and are very beautiful. The Delphinium Hendersonii is a new and superb variety. The D. Wheelerii is also remarkably fine.

All these flowers are heartily recommended for cultivation by the Committee.

J. P. FOOTE, Chairman.

REPORT OF FRUIT COMMITTEE.

White Juneating—Rather small for a market fruit, but of a very pleasant flavor and aroma; bears abundantly every alternate year.

Yellow Juneating.

Prince's Early Harvest—The best, finest and largest apple of the season; of good size, and the specimens before us are very large.

Benoni, Red Streak, Summer Rose, Early Strawberry—All too unripe to form an opinion from the specimens before us.

Madeleine, or Citron des Carmes—One of the very best of our early pears.

Charmontelle—Pleasant but apt to rot in the core; should be gathered, like most pears—before ripe.

English Gooseberry—Very large and prolific; produced two and a half gallons from two bushels; free from mildew at Xenia from whence they came; grown partly in shade.

Warrior—Immensely large for this climate; fine rich flavor; color green.

Slaughterman—Very rich; red.

Jolly Tar—A good fruit; green.

Roaring Lion—Good; rather small.

Red Ocean—Medium; good.

Rifleman—Medium; rather acid.

Heart of Oak—Rather over medium; very sweet and pleasant.

Wellington—Not high flavor, but rather unripe; medium.

Queen Ann—First-rate; rather above medium.

Cook's Eagle—Very sweet and rich; above medium; one of the best.

Shaw's Billy—Very large, rich and sweet.

Red Dutch, Red Grape and Cherry Currants—All very fine specimens; Cherry much larger but more acid than the Red Dutch; Red Grape and Red Dutch about equal in size and flavor.

EDWIN J. HOOPER, Chairman.

Adjourned.

SATURDAY, August 1.

Society met at the usual hour, DOCTOR WARDER in the chair.

On motion, the minutes of the last meeting were so corrected as to read *Mr. Stratton* instead of Mr. Stanton, of Richmond, Indiana.

The Committee on Grape Disease asked to have added to their number Mr. WARD and Professor HENRY FOOTE.

The committee appointed to act upon Mr. LONGWORTH's Strawberry communication asked for further time.

Mr. KELLY, chairman of the committee on Mr. STRATTON's communication on heading-in fruit-trees, asked for further time and promised to report on Saturday next.

Messrs. FITHIAN and PATIANNI presented to the Society ambrotype likenesses of N. LONGWORTH and D. HORN, Esqs. The picture was much admired by the Society and their thanks tendered the artists for the appropriate present.

The discussion of the day is the Grape Rot. Mr. BUCHANAN presented specimens of Grapes affected by the rot.

Mr. WARD remarked that the rot upon the berry commenced without any reference to fungus, and that the same character of rot had been observed upon Apples and Peaches.

Mr. HOWARTH remarked that the rot universally succeeded the mildew, and that in plant culture it is the custom to throw the plant aside when attacked, as the damage is so great to the plant that pruning would be of no avail.

Mr. CARY said that from his observation the rot was unusually destructive the present season; and in relation to the grape he had thought this was not the proper climate for them, but that the growers in Europe had the same difficulty to contend with. He thought the constitution of the grape had been enfeebled by constant cutting and pruning, and that if the same course was pursued we must expect these diseases to accrue; and in order to have healthy, vigorous vines, we must go back to seedlings. He was glad of the efforts being made in certain quarters for the propagation of seedlings.

Mr. FOOTE remarked that experiments tried in growing after the European plan would probably not prove successful in this country; it was his opinion the further the Grape berry was from the ground the better it would flourish. European Grapes that had been tried in this country had blasted every few years, and he thought that we must depend upon our native Grapes.

Mr. CALDWELL thought that inasmuch as the native Grape flourished so finely in this country in a wild state, that it *might be* cultivated to advantage.

Mr. HOWARTH thought it marvelous that the Gooseberry, so apt to mildew, should have so generally escaped the present season, while the Grape should have suffered so severely. He thought that a sandy subsoil would have much to do in preventing mildew.

Mr. CARY held that the atmosphere was in a much more favorable condition at the time the Gooseberries were forming than when the Grape was in the same stage, and thought this fully accounted for the difference noted.

Mr. KELLY remarked that he was sorry any member of the committee had ventured an opinion, as their investigation had not as yet resulted in anything definite.

JOHN E. MOTTIER exhibited Prince's Harvest, Early Bough, Early Junnetting,

Early Strawberry, Summer Red Streak, Summer Rose, Gravestien, Benoni, High-top Sweeting, Apples. Rawl's Janet, of 1856, Harvest Pear.

R. Buchanan exhibited Early Harvest, Sweet June, Sweet Bough, Summer Queen, Early Strawberry, Gravestien, Dutch Codlin, Red Astrachan, Beauty of Kent, Apples.

A. H. Ernst exhibited Early Catharine, Indiana Butter, July Burgamot, Pears. Summer Rose, Apple.

T. V. Petticolas exhibited Lawton Blackberry, Prince's Harvest Apple, Lamas Pears. (The tree bore two bushels).

Wm. Addis exhibited Burnkill's Raspberry, Hooken's Seedling Strawberry, Allen's Raspberry, Whitesmith's Gooseberry.

A. L. Reeder exhibited Early Harvest, Summer Queen, Maiden's Blush and Sweet Bough Strawberries, and Red Streak Apples.

Wm. E. Mearsex hibited new Rochelle Blackberry and Winnestadt Cabbage.

REPORT OF FRUIT COMMITTEE.

Summer Rose—A very pretty, pleasant, small fruit—rather acid.

Keswick Codlen—A very fair, pure-complexioned, medium sized, early cooking Apple ; stews in ten minutes; an enormous bearer; and the fruit hangs very long on the tree.

Red Astrachan—Very beautiful bright red ; a fine juicy, lively flavored fruit.

Williams' Favorite—Rather over medium in size ; a pleasant and rather aromatic flavor.

Craig Apple—A very nice, handsome, early fruit.

Sweet Bough—Large and very pleasant Apple.

Sweet June—A good sweet Apple.

Dutch Codoline—Very large and coarse.

Carolina Red June Apple—A pretty red—rather small fruit—quite as good as the Summer Rose.

Summer Bergamot—A very valuable, early, marketable Pear—pleasant but not high flavored.

Early Catharine—A pretty, small, agreeable fruit.

Indiana Butter—A good sized, pleasant, profitable, early Pear—profitable for market.

Windsor—Rather a poor fruit.

Belle of Brussell's Pear—Very poor in flavor.

Bloodgood—A very nice fruit.

Madeleine—The best and finest flavored early Pear.

Whitesmith Gooseberry—Very large and very rich in flavor ; whitish green.

Brinikle's Orange Raspberry—Very delicately flavored and very sweet.

Allen's Red Raspberry—Not so well flavored as the Red Antwerp.

Lawton Blackberry—Fine, large size ; of the best blackberry flavor.

Hawkin's Seedling Strawberry—Delicious high flavor ; ever bearing.

An Early Cling Peach—Very fine flavor and very valuable and profitable for its earliness.

A Plum Italian Damask—Magnificently large, productive, early and good-flavored plum.

E. J. HOOPER, Chairman.

REPORT OF FLOWER COMMITTEE.

Mr. Heaver is the only exhibitor of Flowers to-day, but they are all fine and some very rare.

A very beautiful and rare flower in a pot is the Crinum Maratinum.

Cut Flowers.—Erithryna Versicolor; Stephanotus Floribundus; Centaurea Americana; Angelona Gardeniana; Antirrhinum Majus, (three varieties); Cystanthus Magnifias; Honeysuckles, Belgic Monthly and Semperfloreus; Heliotrope, Beauty of the Boudoir; Habrothamnus Elegans.

J. P. FOOTE, Chairman.

REPORT OF VEGETABLE COMMITTEE.

Winnestadt Cabbage, a new variety, introduced some two or three years since by the Commissioner of Patents. Maturity early; of medium to large size; solid head, fine grained and of most delicious flavor, resembling cauliflower. Worthy of general cultivation.

Ash-leaf Kidney Potatoes—Specimens before us well grown; an early variety; fine for baking, but not equal to spotted or white Neshannocks for boiling, and not so productive. WILLIAM E. MEARS, Chairman.

MISCELLANEOUS BUSINESS.

Mr. Heaver called the attention of the Society to the necessity of making arrangement for a lot upon which to hold the coming fall exhibition. He reported having received a communication from the lady managers of the Cincinnati Orphan Asylum, tendering the free use of their lot. Mr. Heaver offered the following resolutions:

Resolved, That the tender of their lot by the lady managers of the Cincinnati Orphan Asylum, for the use of the forthcoming fall exhibition, be accepted by the Society.

Resolved, That the thanks of this Society be tendered the lady managers of the Cincinnati Orphan Asylum for the above liberal offer.

Resolved, That the lady managers be requested to take charge of the refreshment table for the benefit of the Orphan Asylum.

Resolved, That the Secretary notify the City Council of the change.

Mr. Heaver gave notice that he would ask, on Saturday next, for a Standing Committee on Grapes and Vines.

Mr. John Waggoner was elected a member of the Society.

The Society then adjourned.

Saturday, August 8.

Vice-President Stoms in the Chair.

The minutes of the last meeting approved after amendment by adding the names of Messrs. Orange, McWilliams, Considine and Dr. Taylor as among the exhibitors of fruit last week.

Mr. Ball, of Clifton, laid before the Society a communication on the Parsnip, with specimens, which were referred to the Committee on Vegetables.

Mr. Kern resigned his post as as a member of Committee on Flowers, and Mr. A. Strauds was elected to fill the vacancy.

Pursuant to notice given at the last meeting, Mr. Heaver moved the appointment of a standing committee of five, to be denominated the Committee on Native

Wine and Vineyards. Carried; and, on further motion, ordered that the members of the Committee be elected at the next meeting.

Mr. H. P. Crydem, of Cleves, and Mr. Thomas Sherlock, of Clifton, were elected to membership.

ON EXHIBITION.

Flowers—By F. Pentland, a great variety of beautiful roses—*Bourbons*, the Liveson Goner, Souvenir de la Malmaison, Monthly Cabbage, Hermosea, Mrs. Bosanquet, Jupiter, Souvenir D'Anseline—*Hybrids Purple*, Giant D'Battailes, Duchess D'Rohan, Reine Mathilde, Baron Prevost, Marquessa Boxeller, Reine de la Guillotiene, Joasine Hanet, Prince Albert, La Reine, Enfant de Mt. Carmel, Leone Verger, Crystal Palace, Jaques Lafitte, Yoland D'Arragon—*Teas*, Marshal Bugeaud, La Sylphide, Saffrans—*Noisettes*, La Pactole, Princess D'Grange, Lee, or Grandiflora, and many others, all beautiful.

By H. Harlin: Nymphæa Alba, Torpeolum Canariensis.

By Sayre & Hutchinson, of Cottage Gardens, the following thirteen varieties of Phloxes, viz:

Phloxes.—From Sayre & Hutchinson, Cottage Gardens—Abdul Medjid, Rendatter, Madam Nerard, Mignonette, Arsenic, Madam Basreville, Triumph de St. Frond, Triumph de Vaise, Candidessima, Alba Glomerata, Duchess de Chamoies, Cosmo, Jenny Roullard.

REPORT OF FRUIT COMMITTEE.

Exhibited—By J. S. Youtcey, of Kentucky, Apples—the Johnny Hill. By Mr. Mears: Pears—the early Catharine. By Mr. Orange: Apples—Sweet Bough, Summer Queen. By T. V. Petticolas: Apples—the Gravenstein(?) English Codlin, early Strawberry, Summer Queen, Sweet Bough, Prince's early Harvest, Benoni, Red Astrachan, Red Streak. By Mr. McWilliams: Apples—Summer Sweet, or High-top Sweet or Oats' Apple, Summer Rose, Caroline June. By Mr. Irwin: An Apple unknown, not yet mature. By Mr. Evans: The Summer Queen. By Mr. Pentland: Apples—the Summer Rose and one name uncertain; Pears—early Catharine. By E. J. Hooper: Apples—Summer Bergamot, or Golden Summer of Coxe; Pears—Seedling Harvest. a passably good summer fruit. By Mr. Buchanan: Dearborn's Seedling and Bloodgood. By Mr. Mears the Lawton, or New Rochelle Blackberry, now ripe, berries very large and perfect; one side-branch from the main cane filled, showing its immense productiveness; flavor very rich. E. J. HOOPER, Chairman.

Mr. Mears also presented a magnificent specimen of the Brugmansia Arborea, beautiful and fragrant. Accompanying his exhibition of the beautiful Lawton Blackberries Mr. Mears submits the following as to their prices and profits:

"*To the Cincinnati Horticultural Society:*

"Mr. President and Gentlemen I send you to-day two baskets and one branch of the Lawton Blackberry. From the specimens do you think it worthy of cultivation? Some persons have decided in the negative. My own impression is that two hundred bushels per acre would be but a fair average crop, and they would doubtless bring \$7 per bushel at wholesale. I would like very much to hear from Mr. Longworth on this point, who is so 'down' on humbugs as not to fear even the 'Prince of humbugs.' Yours, W. E. MEARS."

Society then adjourned.

SATURDAY, August 15.

Vice-President STOMS in the chair. The minutes approved.

The Committee on Mr. STRATTON'S communication had further time granted for report.

Members Elected—Mr. H. A. JOHNSON, of Avondale; Mr. JAMES TODD, of Cincinnati, and Mr. J. F. WALTON, of Campbell county. Kentucky.

Pursuant to the order of last week, the members to constitute the Standing Committee on Native Wine and Vineyards were elected, being Messrs. GRAHAM, SELVES, FOOTE, SHALER and Dr. STURM.

On motion of Mr. ERNST, ordered that Professor CARY, of Farmers' College, be requested to present before the Society a report on the results of Terra culture, as to wheat and other products reared by that process as compared with ordinary methods of agriculture; and further ordered that the Corresponding Secretary notify Professor CARY of this action of the Society.

In view of the importance and general interest attached to the report of the Special Committee on the Grape Culture and the casualties incident thereto, further time was allowed for maturing the report.

A communication was received from Mr. LONGWORTH, inclosing an interesting letter from Mr. F. J. KRONG, of Albemarle, North Carolina, on the subject of the ravages of the "Grapevine-borer," which after being read was referred to the Special Committee on the Grape-Culture above named.

Col. CALDWELL made announcement that several varieties of Wheat, received from the Patent Office, remained for distribution, and requested reports from cultivators of the process and results of their Wheat growing operations.

REPORT OF FLOWER COMMITTEE.

Mr. MEARS exhibited fifteen varieties of very superior Balsam. Mr. COOKE two varieties of the Phlox; very fine. Mr. BUCHANAN two varieties of distinct Althea Frutex.

EXHIBITORS OF FRUIT.

Apples—Mr. ORANGE: a Seedling; Mr. McWILLIAMS: Summer Queen, Craig Apple, Strawberry. Red Junnetting, Red Streak, one unknown; E. J. HOOPER: Summer Queen, Benoni, Red Siberian Crab; Mr. SCARBOROUGH: Summer Queen; Mr. WELTZ: Horse Apple; Mr. PYE: Red Junnetting, Red Streak, Summer Rose, Summer Queen; Mr. HEAVER: Williams' Early; Mr. BUCHANAN: Alexander, Red Astrachan, Summer Queen, Beauty of Kent, Sweet June, Sweet Bough, and Carolina Sweet; Dr. PETTICOLAS: the Early Strawberry, Summer Rose, Gravenstein, Red Streak, Maiden's Blush, Sweet Bough, St. Lawrence, Codling, Red Astrachan, Summer Queen, and Summer Pearman.

Pears—Mr. BUCHANAN: the Dearborn Seedling, Bloodgood, Doyenne Panachee, Early Catharine; Dr. PETTICOLAS: Dearborn's Seedling, Bloodgood, Julienne, Green Chissel, Summer Butter, Jargonelle, and one unknown; Mr. HOOPER: the Windsor, Early Harvest; Mr. HEAVER: the Dearborn's Seedling, Zoar Beauty, Osband's Summer, Julienne, Compte de Eamy, and a Seedling; Mr. PYE: the Bloodgood; A. H. ERNST: the Kirtland, Washington.

Peaches—Mr. WHITE: a very fine free Peach, supposed to be the Apricot Peach; Mr. HOOPER: the George IV, Dr. Taylor, Early Red Malacatune.

Plums—Dr. STURM: a fine branch; Mr. BUCHANAN: the Horse Plum, and Bleecker's Gage; Mr. HEAVER: the Bingham and a Seedling; Mr. McWILLIAMS: the Washington; Mr. HOOPER: the Duane's Purple.

Blackberries—The Lawton, by Mr. MEARS, and a handsome native berry from the

farm of Mr. MILLER, Clermont county; the Ohio Everbearing Raspberry. second crop, by Mr. HOOPER, and a Bigarreau Cherry (very late), by Col. CALDWELL.

REPORT OF FRUIT COMMITTEE.

Apples—Williams' Early; passably good. Williams' Apple; a high, rich aromatic flavor; rich and tender. An apple from Mr. WELLS, supposed to be the Horse Apple; large, fine flesh; an agreeable, rather strong sub-acid; very productive, very large and a good market fruit. Benoni—very high flavored; sub-acid, sweet prevailing; very tender and excellent cooking. Beauty of Kent—rather too acid; large and handsome; very conical in shape; showy for market. Red Astrachan—most beautiful, but deficient in rich flavor; a good deal of acid. Gravenstein—large; richly and distinctly red striped.

Bingham Plum—From Mr. HEAVER; of good size; yellow when ripe; rich and very sweet, and very like the Green Gage and Prince's Early Harvest.

Osborn's Summer Pear—Very good, sweet and delicious. Dearborn's Seedling—One of our best early fruits. Bloodgood—Lively, sprightly, sweet and very agreeable. Jargonelle—Not worth cultivating here; rots too soon. Kirtland's Seedling Pear—Melting, juicy and very good flavored; a native pear, raised from the famed Seckel; very hardy, like its progenitor, and more productive.

Dunand's Purple Plum—A rich production and very good fruit. George IV—Sample rich and very tender, juicy and delicious fruit. Large Red Siberian, Crab—Very beautiful, waxy looking, red and yellow, excellent for preserves and jelly.

A very juicy, rich Peach, from Mr. WHITE—Valuable for its earliness, large size and fine quality.

Julienne Pear—One of the best early Pears, but not so early as the Summer Butter, and not better in flavor—hardly as good.

Early Strawberry Apple—A fine sprightly and very agreeable fruit, hangs long on the tree; ripens very conveniently in succession for family use. A Seedling Apple from Mr. ORANGE. Not yet ripe, but promises well.

SATURDAY, August 22.

Vice-President HOOPER in the chair.

Dr. MOSHER offered the following resolutions:

Resolved, That all fruits, flowers, etc., brought to this Society at the weekly meeting be exhibited on tables in front of the President's chair, and that they remain there untouched, except by the appropriate committees, till after adjournment. If any particular specimen demand a special examination the committee shall take the same to a private room to prepare a report thereon. All specimens that contributors wish to preserve shall be labeled "Reserved."

After a discussion of the foregoing, which was offered with a view to obviate the confusion attending the public examination of fruits and flowers on exhibition, the resolution was adopted.

Mr. JAMES MCGREW, of Campbell County, Ky., and Mr. JOHN R. DAVY, of Branch Hill, Clermont County, were elected to membership.

The Secretary made announcement that he had received the circular of the Agricultural and Mechanical Exhibition of Missouri, to be opened at St. Louis, on the 28th of September, and that arrangements had been made whereby persons attending the exhibition could make the round trip at half fare.

REPORT OF FLOWER COMMITTEE.

Mrs. Bickham exhibited *fifty varieties* of fine Verbenas. A beautiful specimen of the Victoria Regina was presented by Mr. Herling, and Mrs. Heaver presented two beautiful boquets, most attractive and delightful.

J. P. FOOTE, Chairman.

The following resolution was adopted:

Resolved, That the Council be authorized to procure suitable plates, baskets and other articles proper for the exhibition of fruits and vegetables; and that they be placed on the tables of the Society for the use of exhibitors.

Mr. Ernst laid before the members the Circular of the Ohio Pomological Society, announcing the meeting of that Society, September 14th, at the Horticultural Society's rooms.

Mr. Riley tendered his resignation as a member of the Fruit Committee, which was, on motion, laid on the table for three weeks.

On motion of Mr. Mullet ordered that the works on Fruits belonging to the library be restrained from circulation for the present, in order that the same may be found for reference.

Mr. Sayre announced that the work for preparation for the Annual Exhibition on the Orphan Asylum grounds was going forward with energy and desired all the members of the Council and of the Society to visit the ground and give aid and comfort in the prosecution of the work.

Fruit-can Exhibited.—Mr. Green, agent for "Arthur's Fruit-can," presented some specimens which were favorably regarded by the members as a superior article for preserving fruits. It will be subjected to experiment and further report.

EXHIBITORS OF FRUIT.

S. S. Jackson: The Fejee Tomatoes, Seedling Pear, Jackson's Everbearing Raspberry.

Mr. Erwin (for names): Two Apples, two Plums and five Pears.

Mr. Kelley: Pears—The Dearborn Seedling, Julienne, and two unknown.

A. L. Reeder: Apples—The Benoni, Alexander, Summer Queen and Bough.

Col. Riddle: Pears—for a name (the Julienne).

Mr. Bush: Plums—The Emperor, Bleecker's Red Gage, Apricot Plum, Prince's Imperial Gage and one for a name.

Mr. Pye: An apple for a name.

Mr. White: Peaches.

Mr. Mottier: The Summer Butter, Stone and Julienne. Apples—The Sweet Bough, Prince's Early Harvest, Summer Rose, Summer Queen, Benoni, Dana, Early Joe. Peaches—Morris' Red Rareripe, Yellow Rareripe.

Mr. Mears: Apples—Fee's Early. Pears—Orange, Bergamot and one unknown, the grafts of which came from Berlin. Blackberries—New Rochelle or Lawton.

Dr. Petticolas: Apples—The Sweet Bough, Dutch and English Codlings, Benoni, Gravenstein, Summer Pearman, Summer Queen, Hawley, Maiden's Blush, Early Strawberry, St. Lawrence, Summer Rose, Redstreak, Lowell, Porter and a new seedling (sweet)—name unknown. Pears—Julienne, Dearborn Seedling and Green Chissel. Plums—Yellow Egg and Green Gage.

Mr. Youtcy: An apple for a name.

Mr. ERNST: Pears—The Kirtland.

Mr. HEAVER: Pears—The Tyson, Julienne, Dearborn Seedling, Gobault Bloodgood, Autumn, Superb. Plums—The Washington and Blue Plum.

Mr. CRANCH: Summer Bergamot.

Mr. SCARBOROUGH: Pears—Dearborn Seedling, Julienne. Apples—The Maiden's Blush, Summer Queen, Summer Rose.

Mrs. BICKHAM: The Dearborn Seedling and another, a Seedling.

Mr. TURREL: Apples—Bough Apples and Summer Queen. Pears—Jargonelle English.

Mr. COOK: Plums—Flushing Green Gage.

Mr. TURREL also exhibited a branch of Garbansa, from Spain, commonly called the "Coffee Pea."

REPORT OF FRUIT COMMITTEE.

Pears—Kirtland's Seedling—Specimens from Mr. ERNST in perfection; nearly equal to the famed Seckel, its parent; most delicious; rather above medium; ripening earlier than the Seckel; a good grower and bearer.

Tyson—Beautifully colored, rich yellow and bright red; very tender and with a great deal of sugar; very good.

Washington Plum—From Mr. HEAVER—Magnificently large, and the flavor is generally well known as being good.

Horse Apple or Fall Queen—Of great size, and now beginning to be a great market fruit, and of good flavor for a large and coarse Apple.

Yellow Egg Plum—Rather indifferent in flavor, at least not ranking with the best—chiefly for cooking.

Green Gage—Well known as the most delicious of all Plums.

Stone Pear—Only fit for market, which is paying the public at large a poor compliment.

Emperor Plum—Grand and fine as usual here.

The apple from Mr. PYE, for a name, is Summer Sweet.

Mr. Jackson's Seedling Pear—Medium prolific, and a good juicy fruit.

Jargonelle English—A poor fruit in this climate.

Prince's Imperial Gage—Well known as a valuable fruit; but little behind the Green Gage in excellence.

The fruit tables were crowded with splendid specimens of our orchard products, while flowers of the richest colors lent beauty to the exhibition.

APT ANSWER.—An English nobleman once sent his stupid son to Rowland Hill in order that he might be educated, accompanied with a note, in which his father said of his hopeful: "I am confident that he has talents, but they are hidden in a napkin." The eccentric but shrewd divine kept the youth a few days under his care and then sent him back to his father with the following laconic message: "I have shaken the napkin at 'all corners' and found nothing in it."

METEOROLOGICAL TABLE.

Observations made at Farmers' College, College Hill, Hamilton County, Ohio, Latitude 39° 19′, *W. Lon.* 7° 24′ 45″ *for the month of July,* 1857, *by Prof. R. S. Bosworth. Hight of Station above the Sea,* 800 *feet.*

	Barometer, corrected for temperature & capillarity.				Open air thermometer.				Clouds—course & velocity.						Wind—direction & force.			Rain & melted snow.		
	7 A. M	2 P. M	9 P. M	Mean.	7A. M	2 P. M	9 P. M	Mean.	7 A. M.		2 P. M.		9 P. M.		7. A. M.	2 P. M.	9 P. M.	Hour Began.	Hour Ended.	Am't Inch.
1	29.020	29.010	29.010	29.013	56.0	62.0	57.0	58.3	0	0	10	N. W. 5	10	N. W. 4	N. W. 3	N. W. 3	N. W. 3			
2	29.042	29.065	29.110	29.072	59.0	69.0	56.0	61.3	10	N. E. 6	2	N. W. 5	2	N. 3	N. 4	N. 2	N. 2			
3	29.170	29.130	29.165	29.155	61.0	78.0	61.5	66.8	4	N. E. 5	5	N. E. 2	0	0	N. 3	N. E. 2	N. E. 1			
4	29.195	29.180	29.210	29.195	62.0	69.0	61.0	64.0	0	0	9	N. 1	0	0	0	N. E. 1	0	Passing	showers.	
5	29.300	29.270	29.290	29.286	69.0	81.5	60.0	76.8	0	0	8	N. 1	2	N. 1	N. E. 1	N. 1	0	3-3½.4½	P. M.	0.320
6	29.300	29.290	29.270	29.286	68.0	74.5	61.0	67.5	2	0	6	N. W. 1	9	Nim.	S. 1	N. W. 1	0	2:50,3:45	P. M.	0,030
7	29.260	29.240	28.220	29.240	66.0	79.0	74.0	73.0	1	Cirri.	6	S. E. 2	0	0	0	W. 2	S. 1			
8	29.250	29.180	29.200	29.210	76.5	83.0	69.0	76.1	9	Nim.	8	S. 1	2	0	S. W. 1	S. W. 3	S. 1	6 P. M.		0.150
9	29.240	29.230	29.240	29.236	69.5	83.5	70.0	77.6	0	0	1	Cum.	0	0	N. 1	N. W. 1	0	3½ P.M.		
10	29.300	29.290	29.290	29.293	70.5	82.0	73.0	75.6	1	cir. cu.	6	Nim.	0	0	0	S. W. 1	0	3¾ P.M.		
11	29.320	29.270	29.260	29.283	72.0	85.5	75.0	77.5	10	Cu Str.	8	Cum.	0	0	S. 1	N. E. 1	0			
12	29.300	29.210	29.210	29.240	74.5	90.0	76.0	80.1	2	Cirri.	3	"	0	0	0	0	S. 1	4:50P.M.		0.045
13	29.210	28.140	29.130	29.160	74.0	89.0	79.5	80.8	2	"	4	"	2	0	S. 1	S. 2	S. 1			
14	29.120	00.000	29.070	29.063	76.5	00.0	77.0	76.7	10	Nim.	0	0	10	Nim.	S. E. 1	0	0	9 A.M.	9 P. M.	0.242
15	29.090	29.070	29.070	29.076	73.0	81.0	77.0	77.0	0	0	4	Cum.	0	0	N. 2	N 3	N. W. 1			
16	29.070	29.040	29.060	29.566	73.0	89.0	80.5	80.8	0	0	5	"	0	0	N. 1	N. 1	0			
17	29.120	29.090	29.100	29.103	79 0	91.0	85.0	85.0	0	0	1	Str.		Nim.	S. 1	0	0			
18	29.090	29.110	29.090	29.096	75.5	88.5	80.5	81.5	10	Cu.St.	8	"	0	0	S. 2	S. 1	0			
19	29.080	28.980	28.980	29.013	75.5	89.5	81.0	82.0	10	Nim.	0	0	3	Nim.	0	S. 2	S. E. 2			
20	28.970	28.900	28.910	28.926	76.5	89.5	72.0	79.6	1	St.	3	Cum.	0	0	N. 2	S. W. 3	S. E. 1	4 P. M.		0.515
21	28.980	28.940	29.020	28.980	66.5	77.0	66.0	69.8	5	Cum.	10	Nim.	3	Str.	N. E. 2	S. E. 3	0			
22	29.030	29.030	29.040	29.033	58.0	71.0	66.5	65.1	10		10	"	4	Cum.	E. 1	S. W. 3	0			

23	29.020	29.010	29.060	29.030	62.5	77.5	70.0	70.0	10	Nim.	9	Cum.	1	Cum.	N. E. 1	N. 1	0		
24	29.090	29.090	29.030	29.070	64.0	79.0	72.5	71.8	5	Cir. Cu	8	Nim.	0	0	0	S. W. 3	0		
25	29.120	29.220	29.230	29 190	73.0	88.0	79.0	86.3	2	0	5	Cum.	1	Str.	0	S. 2	0		
26	29.280	29.210	29.230	29.240	75.0	88.5	80.5	81.3	9	Cum.	9	"	0	0	S. E. 1	0	0	Heavy	showers
27	00.000	29,160	29.160	29.106	00.0	88.5	73.0	80.7	10	Nim.	9	Nim.	10	Nim.	0	S. W. 2	0	during	the day.	2.095
28	29.160	29.140	29.190	29.163	73.0	80.0	72.0	75.0	10	"	9	Cum.	10	Cum.	S. W. 1	S. W. 2	N. E. 1			
29	29.210	00.000	29.160	29.123	67.5	00.0	70.0	68.7	10		0	0	10	Nim.	0	0	0	9 P. M.		0,204
30	29.066	29.100	29.130	29.096	70.5	79.5	73.5	74.5	10	Nim.	9	Nim	5	Cum.	N. E. 1	0	S. 2			
31	29,150	29.100	29.080	29.110	73.0	86.0	78.0	79.0	1	Cirri.	5	Cum.	10	Nim.	S. 1	S. W. 2	S. 1			
Sums.				913.660				2314.2												3.601
Means.				29.473				74.6												

REMARKS ON WEATHER.

6th. Showers during afternoon and evening; slight.

8th. Sprinkled several times during the day. Rain set in about 6 P. M.; stopped in the night.

14th. Very heavy thunder showers at 9 A. M. and 9 P. M.

27th. Heavy showers, and much needed.

REMARKS.— Month quite seasonable. Wheat fine; about two weeks later in harvesting, as all other crops. Wheat harvest not completed until 18th. Mildew bad upon grapes.

EXPLANATION.—The state of the sky is indicated in this table by numbers from 0 to 10; 0 signifies perfectly clear sky, 10 that it is entirely covered with clouds, and intermediate numbers show the number of tenths clouded. The direction from which the wind blows is shown in the initials of the points of the compass. Its force is indicated by numbers; 0 meaning a perfect calm, and 10 the most violent hurricane.

MONTHLY EXTREMES.

	MAXIMA.				MINIMA.			
	7 A. M.	2 P. M.	9 P. M.	Month.	7 A. M.	2 P. M.	9 P. M.	Month.
Barometer, . . .	11th. 29.320	10th. 29.290	10th. 29.290	29.320	20th. 28.970	20th. 28.900	20th. 28.910	28.900
Thermometer . .	17th 79.0	17th. 91.0	17th. 85.0	91.0	1st. 56.0	1st. 62.0	2d. 56.0	56.0

THE PLOW.

BY O. W. HOLMES.

Clear the brown path to meet the coulter's gleam!
Lo! on he comes behind his smoking team,
With toil's bright dew-drops on his sun-burnt brow!
The lord of earth, the hero of the plow!
First in the field before the reddening sun,
Last in the shabows when the day is done,
Line after line along the burning sod,
Mark the broad acres where his feet have trod;
Still where he treads the stubborn clods divide,
The smooth, fresh furrow opens deep and wide;
Matted and dense the tangled turf upheaves,
Mellow and dark the ridgy cornfield cleaves;
Up the steep hill-side where the laboring train,
Stands the long track that scores the level plain;
Through the moist valley clogged with oozing clay,
The patient covoy breaks its destined way;
At every turn the loosening chains resound,
The swining plowshare circles glistening round,
Till the wide field one billowy waste appears,
And wearied hands unbind the panting steers.

THE ETERNAL MORNING.

Bright, glorious sunlight, through my casement peeping,
  On this new morning, in its first warm blush,
How can I lie here idly dozing, sleeping,
  And clinging to these dreams of soothing hush.
Nature is vocal with its morning praise,
  And e'en this wealth of clustering vines
An anthem in each dewy flower displays—
  A silent chord among these tuneful chimes.

Sweet bird-songs vibrate on the coo'ing air,
  The air so grateful to each waking force;
Fresh life is round me, o'er me, everywhere,
  A quickened impulse from the great life source;
My living soul lifts up its earth-soiled wings,
  And proudly plumes them for another dawn,
Watching with patient gladness till it brings
  The glorious sunrise of an endless morn!

 [CULTIVATOR MARY.

Photograph by J. P. BALL & THOMAS

EHRGOTT & FORBRIGER Lith. Cin. O.

VIEW AT THE ENTRANCE TO THE CEMETERY.

THE

CINCINNATUS.

VOL. II. OCTOBER 1, 1857. NO. 10

AN ETHNOLOGICAL INQUIRY CONCERNING THE ABORIGINAL RACES OF AMERICA.

NO. I.—ARGUMENT FROM ANCIENT CRANIA.

AMERICA has lost its claim to the title of "New World," given to it by the great Italian navigator. The investigations of respectable geologists bring us to the conclusion that the Mississippi river has been running in its present bed for more than 100,000 years, and that the Niagara has been pouring down vast inland seas in gigantic water-spouts, over its slowly eroding ledge of limestone, from an antiquity equally remote.

Its aboriginal races of men, too, are undoubtedly of very high antiquity. Over an immense territory, bounded by the Atlantic and Pacific, the Gulf of Mexico and the great Lakes, are scattered innumerable mounds covered with primitive forests, on the origin of which, and the "Ancient People" that constructed them, the present savage tribes of this continent have scarcely a tradition. To show the extreme antiquity of these probable "Autochthones" of this continent, it is only necessary to refer to the fact that from the ruins of Nineveh and Babylon we have bones at least 2,500 years old—from the pyramids and catecombs of Egypt crania have been taken of still higher antiquity in a perfect state of preservation, unmummied; yet the skeletons deposited in our Indian mounds, from the Lakes to the Mexican Gulf, are crumbling into dust through age alone.

A word in regard to the identity of this race of mound-builders with the present aboriginal tribes which inhabit this country from Cape Horn to Canada. Passing by the many evidences which

might be adduced in support of the commonness of their origin, we will base our argument upon their uniform resemblance to each other, in the type of their cranial conformations. Specimens taken from the different Indian tribes of this continent present heads precisely analogous to those ancient crania taken from the mounds over the whole territory of the United States, while they most strikingly contrast with the various white populations among whom they are moving. The vertical occiput—the prominent vertex—the great interparietal diameter—the low defective forehead—the small internal capacity of the skull—the square or rounded form with quadrangular orbits and massive maxillæ, are peculiarities which stamp the American groups, and more especially the Toltecan family, and distinguish them widely from any other races of the earth, whether ancient or modern. It has been a principle with modern craniologists, all other things being equal, that the size and volume of the brain is a measure of intellect and force of character. But Dr. MORTON from an examination of 338 crania develops the surprising anomaly that the brain of the Indian in his savage state is far larger than the old half-civilized Peruvian or ancient Mexican. The average volume of brain in the barbarous tribes is shown to be from 83½ to 84 cubic inches, while that of the Mexicans is 79, and in the Peruvian only 75. This, after various trials with water and different kinds of seeds, was obtained with the greatest precision by running small shot into the cavity of the skull and afterwards measuring them. But it must be remarked that the intellectual lobe of the brain in the two latter races is, at least, as large as in the former; the difference of volume being chiefly confined to the basilar and occipital portions of the encephalon, so that the intellectual and moral qualities of the Mexicans and Peruvians, which were at least as large, if not larger than those of the other group, were left more free to act, not being so subordinate to the propensities and violent passions.

In this view of the subject the seeming discrepancy vanishes, and the craniological paradox of a semi-civilized race with a smaller brain being superior to savage tribes with larger brains, perfectly accords with such facts in the history of these two divisions as have already come to our knowledge. It is also strongly probable, from the same evidence, that the more cultivated and less resolute mound-builders were vanquished and dispossessed by their more energetic and barbarous neighbors. It is interesting to notice in this con-

nection that the ancient Egyptians and Hindoos, who in very early times reached a considerable degree of civilization, had, like the Mexicans and Peruvians, much smaller heads than the savage tribes around them.

The classic race of Greece and Italy, superior in every respect to the barbarous but larger-headed nations of Northern Europe, were finally altogether outstripped and dominated over by them. And what is more remarkable than all, the Teutonic head is no larger now than it was 1000 years ago, when Northern Europe was a savage and howling wilderness, inhabited by a people surpassing the wild beasts in ferocity. J. P. E.

[TO BE CONTINUED.]

MEETING OF AMERICAN INSTITUTE FARMERS' CLUB, AUGUST 4, 1856.

DIOSCOREA BATATAS.

Revue Horticole, PARIS, June, 1847.

EXHIBITION AT VERSAILLES.—Fine specimens of the Dioscorea Batatas were exhibited by MONS. REMONT, of Versailles, whose practical zeal in cultivating has been rewarded by receiving from the hand of the Empress, the Grand Prize of Honor (being her gift).

Bulletin De La Societe Imperiale Zoolozique D'Acclimation.

MONS. CHEVET, Chairman of the Committee on the subject, reports that the cultivation of the Dioscorea Batatas in our market gardens is *sure*, both on account of its abundant crop and its excellent quality. Its culture is easy; it requires but little care; its hardihood proved; it keeps perfectly in the earth; no cold hurts it; it is very readily multiplied by the seed or by the little balls—" Bulbillies"—and by cuttings, etc. It should be planted in rows from forty to fifty centimetres apart—(about from sixteen to twenty inches). I have demonstrated the excellence of this tuber for our tables—for plain dishes, and for luxurious dishes. It cooks in *half the time required by the potatoe*, in the pot, in the oven, or under hot ashes. *The poor will profit more by it than the rich.* I come to the society to ask for votes of thanks to our Consul, MONS. MONTIGNY, who sent it to us from China—and to the members of this Society who have carefully cultivated this precious plant in their respective departments.

TALPA CHRONICLES OF A CLAY FARM.

CHAPTER II.—THE "DEVIL ON THREE-STICKS."

(Continued from page 395.)

THERE is an old saying that "Fools build houses for wise men to live in;"—a proverb which, whether applicable or not to farms as well as houses, probably receives about as fair an average of direct verification in the course of each man's individual experience as any other of those mysterious morsels of traditional truth which are handed down from each generation to its successor (like faery money, gold in the giver's, dust in the receiver's hand.) The young experimentalist in brick-and-morter, with a shake of the head not unworthy of the Elizabethan statesman (whose posthumous fame has owed so much to that outward symptom of plethoric wisdom), admits the general and antecedent truth of the motto which might be scrolled up over so many a splendid doorway; he does not doubt or deny it, not he! It is not to disprove its general, but to parry its *particular* application that he purposes; it is not to invalidate the truth of the rule as against *man*, but to prove it by an exception, in the case of *one individual of the species he knows of.* And the clear rectangular pencil-work, and the softening shades of the brush of the accomplished artist-architect do their work upon his eyes, like vanity reflected in a mirror, as he beholds (on pastepoard), the "Splendid Elevation," and then reads with delight in one corner of the sketch, beautifully printed in Indian ink, the "exceedingly moderate *estimate*." (Such is "the taper that has lighted fools" each on his solitary track out of the beaten high-road of old experience, leading them on by the marsh-light hope of individual exemption from the common lot. And old men shake their heads, and only smile at the sallies of youthful arrogance that rise and break in succession upon the shore of life, and need no reproach but that which their own sure ebb will bring with it.)

And so they felt, and so they looked on me, in the autumn of ——— no, I dare not say how long ago!—when the arrival of load after load of draining-tiles gave parish notice of the attempt to drain what antiquity had pronounced undrainable since the deluge.

"But why can't it be drained?" asked Greenhorns.

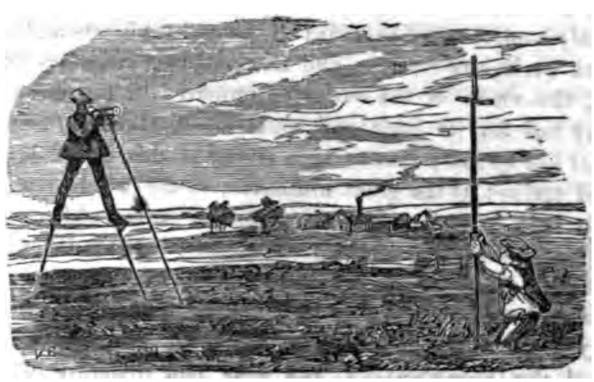
"Because there's *no fall!*" replied collective Wisdom.

"Has it ever been tried with a Spirit-level?"

Now this was not a fair question. Spirit-levels (if they had any meaning or existence at all) were unintelligible, mathematical-looking instruments of purely professional nature, only seen (if ever) in the hands of road-surveyors' assistants and people of that sort. They had nothing whatever to do with farming. The question was unfair: it contaimed an ambiguous term.

Picture to yourself, however, the following conclusion from it. A bleak, foggy, November day; a long rambling space, marsh or meadow, as you might choose to call it, of some twenty acres in extent, and about the third part of a mile in length, with a narrow, thick plantation of rushes, sedges, and brook-lime, and such aquatic vegetation, threading its way in one long dank line from end to end, by such fantastic meandering, that it looked as if the hidden channel of choked moisture it concealed had been making a continued series of experiments from time out of mind in search of an outlet; and after centuries of struggle and disappointment had at length arrived, quite by accident, at a certain point at one end of the meadow—where you might see a pair of high mud boots standing, or rather soaking, with a man in them, peering through a telescope on three legs, as if he was watching for the total eclipse of a small bay that is to be seen—gradually sinking—about fifty yards off, and clutching in his agony a high staff by his side, figured as if for high and low water-mark.

Presently the Boots and the Telescope, after various ineffectual efforts and heavings, succeed in striking their quarters; the boy, after sundry spasmodic struggles, to correspond, achieves the same exploit; and the same scene as before occurs again some fifty yards



"Has it ever been tried with a Spirit-level?"

further on, and again, at the same intervals, until they reach the other end of the meadow, and come plump upon the banks of a marshy pool some six acres in extent. On attaining this point the telescope is suddenly shut up with a triumphant snap; its three legs jump into one; the dripping, shivering boy receives a tremendous, involuntary thwack on the back, and A FALL OF NINE FEET is declared—like a "Dividend of ten per cent. and a Balance over to go on with!"

Oh you primeval Carp, Pike, and Eels! You little thought, on that day, how deadly a fishing-rod, marked and measured inch by inch, threw its shadow across your ancient domain; little did your believed security dream of so new a monster, *the angler upon three legs*, that had measured the altitude of your downfall and caught you all, if not upon one, upon *two cross hairs.*

Old Fish or a New Farm? Snipes or Swede-turnips? Which was it to be? There stood but this question between the will and the way to let the Dry Land appear. And who knows what Saurian monstrosities of a primeval age might be brought into daylight when this stagnation of waters was let loose, which had dammed up the moisture of so many broad acres from time immemorial? since, little raised above the high-water-mark of this pool, lay the subsoil of the whole farm beyond and around it; and the lowest point of this meadow was the lowest point of all.

CHAPTER III.—A "PRACTICAL" BEGINNING.

It was urged by Mr. BRUNEL, as a justification for more attention and expense in the laying of the rails of the Great Western Road between London and Bristol than had been ever thought of upon previously construsted lines, that all the embankments and cuttings, and earth-works and Stations, and Law and Parliamentary expenses, in fact, the whole of the outlay encountered in the formation of a railway had for its main and ultimate object *a perfectly smooth and level line of rail;* that to turn stingy at this point, just when you had arrived at the great ultimatum of the whole proceedings, viz: the Iron Wheel-track—was a sort of saving which evinced a want of true perception of the great object of all the labor that had preceded it. It may seem curious to our experiences, in these days, that such a doctrine could ever have needed to be enforced by argument; yet no one will deem it wonderful who has personally witnessed the unaccountable and ever new difficulty of getting

proper attention paid to the leveling of the bottom of a drain, and the laying of the tiles in that continuous line, where one single depression or irregularity, by collecting the water at that spot year after year, tends toward the eventual stoppage of the whole drain, through two distinct causes, and softening of the foundation underneath the sole, or tile flange, and the deposit of soil inside the tile from the water collected at the spot, and standing there after the rest had run off. Every depression, however slight, is constantly doing the mischief in every drain where the fall is but trifling ; and if to the two consequences above mentioned, we may add the decomposition of the tile itself by the action of water long stagnant within it, we may deduce that every tile-drain laid with these imperfections in the finishing of the bottom, has a tendency toward obliteration, out of all reasonable proportion with that of a well-burnt tile laid on a perfectly even inclination, which, humanly speaking, may be called a permanent thing. An open ditch cut by the most skillful workman, in the summer, affords the best illustration of this underground mischief. Nothing can look smoother and more even than the bottom, until that uncompromising test of accurate levels, the water, makes its appearance : all on a sudden the whole scene is changed, the eye-accredited level vanishes as if some earthquake had taken place : here there is a gravelly *scour*, along which the stream rushes in a thousand little angry-looking ripples ; there it hangs and looks as dull and heavy as if it had given up running at all, as a useless waste of energy ; in another place a few dead leaves or sticks, or a morsel of soil broken from the side, dams back the water for a considerable distance, occasioning a deposit of soil along the whole reach, greater in proportion to the quantity and the muddiness of the water detained. All this shows the paramount importance of perfect evenness in the bed on which the tiles are laid. (*The worst-laid tile is the measure of the goodness and permanence of the whole drain*, just as the weakest link of a chain is the measure of its strength.)

But this of course was all theory, and theory of course was all nonsense : my practical head-drainer was quite of a different way of thinking, as his *modus operandi* will exhibit. The morning after he had commenced operations, I found him hard at work cutting a drain, about eighteen inches deep, *laying in the tiles one by one and filling the earth in over them as he went !*

The field I had begun upon was very large and very flat, and in

order to increase artificially the fall, I had calculated so as to make the drain eighteen inches deeper at the mouth than at the tail. I might as well have calculated the distance of a telescopic star.

"*I've been a-draining this forty year and more—I ought to know summut about it!*"

Need I tell you who said this? or give you the whole of the colloquy to which it furnished the epilogue?

I had begun something in this way—"Why, my good friend! what on earth are you about? Did n't I tell you to lay the drain open from bottom to top, and that not a tile was to be put in till I had seen it, and tried the levels?" etc., etc.

(Old as Adam—old as Adam was the whole dialogue—it is idle to go through it—Conceit *versus* Prejudice—the ignorance of the young against the ignorance of the old—the thing that has been, and will be, as long as "the sun and moon endureth." It ended as I have said.)

"I've been a-draining this forty years and more—I ought to know summut about it!"

Here was a staggerer. Among all my calculations to think that I should never have calculated on this! I had seen the commander of a noble steamer, with one parenthetical-looking point of his fore-finger (caught in an instant by the helmsman), veer round a ship of a thousand tons burden; I had seen the mill-owner, with half a nod to his foreman, stop in an instant the hurly-burly of a thousand wheels while he explained to me, in comparative quiet, some little matter of new invention in the carding of the rough wool, or the rounding and hardening of the finished Twist. I had seen enough of the empire of Mind over Matter in many forms and shapes, by sea and land, to make me the devoutest of believers in modern miracle. Under the quiet seductive brightness of the mid-night lamp, I had reveled in the mysteries of Number and of Form; and in the working realities of daylight, I had seen and stood witness to the application of those apparent mysteries to the most beautifully simple processes in the production of ordinary and universal articles of human want. It had furnished me no new or difficult gratification to level and calculate to an inch, the amount of Fall to be obtained upon a field, which, without this precaution, might indeed be called, as it had been called, undrainable; and here I was, fairly *planted* at the first onset. Every inch of depth was of real value at the mouth of so long a line of drain. "Three feet

deep at the outlet" was the modest extent of my demand; and there I stood, watchingthe tiles thrown in pell-mell to a depth of eighteen inches, which I was given to understand was "about two feet deep," with as cool an indifference to the *other* foot, as if Two and Three had been recently determined to mean the same thing.

"But I *must* have it three feet deep!"

"Oh it's no use: it 'll never drain so deep as that through this here clay!"

"But I tell you it *must* be! There can be no fall without it."

"Well, I've been a-draining this forty year, and I ought to know summut about it."

From that moment I date my experience in the trials and troubles of farming; at that instant my eyes began to open to the true meaning of those "practical difficulties" which the uninitiated laugh at because they have never encountered them; and which the man of science despises who has said to stream, water, and machinery, "do this," and they do it, but has never known what it is to try and guid out of the old track, a *mind* that has run in the same rut "this forty year and more."

Agricultural Experiments.—A great many valuable hints and suggestions for practice may be learned from agricultural papers. It is not uncommon to hear farmers remark that they have derived more pecuniary advantage from a single article than the price of the paper for many years. But to prevent disappointment, farmers must always use their judgment; circumstances vary so greatly that what is highly beneficial in one case may be ruinous in another. Great mischief is done by looseness, carelessness, or partiality in reporting experiments; a single trial of a crop sown by guess-work, cultivated at random, and measured by a hasty glance of the eye, is often considered decisive by the inaccurate farmer. He sees a little, presumes a great deal, and jumps at a conclusion, when perhaps if he had taken the twenty other operating causes into the account there would have been no conclusion at all. Opinions are sometimes formed, and facts afterwards sought to support them; the report of such facts is not worth the ink to record them. It is no wonder that some are disheartened by these, from all trials.

MEETING OF FARMERS' LYCEUM, AT WALNUT TREE FARM, JULY 29TH, 1857.

THE minutes of a most interesting meeting of the Farmers' Lyceum, of Green Township, recently had at the residence of Rev. B. U. WATKINS, have been received through the politeness of the Secretary, WM. W. RICE, and we regret exceedingly that we can not publish them entire; and had it not happened that the subject matter of discussion at that meeting—wheat and wheat culture, with numerous experiments, formed so large a part of our present number, we should have done so.

The speakers on the occasion who took part in the discussions were President MATTOON and Ex-President CARY, of Farmers' College, and W. H. ONGLEY, who were present as guests; B. U. WATKINS, GEORGE CAT, and W. W. RICE. Mr. WATKINS, who had been appointed to open the subject, did it in a most interesting and familiar manner—mentioned various experiments as recorded in his communication in the present number—of all wheats now cultivated he considered the *white Perkey* as a superior variety. White Flint similar but not coincident. Gave his views of smut—how prevented, etc.

Mr. GEORGE CAT would prefer middle of September, as the best time ordinarily for sowing. Soaked his seed in salt brine and dried with lime—free from smut, fine yield; had stalks seven feet in hight plowed and rolled.

Considers it of importance to select the best kind of seed. Put it in at the right time. Plow deep before sowing, underdrain if wet, manure to lighten and enrich.

Mr. CARY followed Mr. CAT with interesting remarks, as to experiments on Farm of College, deep and shallow sowing etc.

Mr. RICE stated he had shocked one hundred and eighty-three dozen large bind White Perky wheat on three acres. The thickest was on potato ground, another portion was on clover sod, with barn-yard manure, wheat averaged about five feet, plowed deep, seed harrowed in, not deep, ground made quite smooth before sowing, seed well washed, no smut.

President MATTOON, declared himself much interested. We need more light—he had been enlightened this afternoon—could say "it is good to be here."

In every Sunbeam there has been found three distinct properties. The chemical, the luminiferous and calorific. Early in the season the chemical preponderates in germinating the plant, later the luminiferous preponderates, as more light is needed; still later, the calorific gains the ascendant to mature the fruit and form the reproductive elements. Beautiful arrangement! There is a chemestry of the mind which sets men to thinking. There is a light which shows through progress, and there is manifest a steady, strong heat as results are neared. Has seen in a German chemistry a diagram showing the relative influence of different agencies. Among them was electricity; but its office remains unexplained. It doubtless has a powerful influence in the nurture and perfection of plants. To get the benefit of this subtile, but ubiquitous agent, we must plunge deep, pulverize the soil, and cover *lightly the seed.*

Proposed Mr. WATKINS to ascertain what kind of plows and harrows the Egyptians used in the great valley of the Nile, "when they cast their bread upon the waters." He commended the Lyceum; farmers need just such an organization—the head needs it—the heart needs it—the body needs it—they ought to be the happiest people in the world. Their sources of enjoyment are ample—fruit, and flowers, and songs of birds and new problems of thought are ever about their path. Better, far better are such gatherings, than to play the fop or fool at Saratoga or any other resort of fashion.

The Lyceum closed after passing the following resolutions:

Resolved, That it is the opinion of this Lyceum for the successful culture of wheat it should be sown during September, on good, deeply plowed, well pulverized soil, and covered near the surface.

Resolved, That the Lyceum considers the Pirk or Purkey wheat by far the best variety known to them for this locality.

THE POPPY.—A letter received at the Patent Office from Germany, says, the poppy is cultivated in southern Germany to a large extent, as a substitute for sweet oil. It has supplanted the use of the imported olive oil wholly in that country. It is further stated that the soil and climate of the New England States is highly suited for the culture of this article, and they might provide the whole Union with sweet oil, and thus save a large sum of money, which goes to France and Italy.

EDUCATION—CENTRALIZATION.

MR. EDITOR,—I beg permission to offer a few suggestions on the subject of polite education, and its relative influences upon the rural and civic population of this growing Commonwealth. No subject, when fully comprehended, can be of intenser interest to the Christian, the guardian of youth, and to all who devoutly cherish the principles of our free government and Holy Religion. I do not call *that* Education or Civilization which leaves out Christ, or ignores any one of the fundamental principles of revealed religion. Works on science *have been* written, and *may* be again, from which it could never be ascertained whether we were living in a Christian or Pagan land. And this is in our own times and country. I would not deny but instruction may be given, with no lessons of religion imparted but what may be gleaned from the mute utterances of nature or deductions of reason. But under no such system can *man*, the *whole man*, be educated; and for this simple reason, that there is no certainty or fixedness about any religion, save that revealed from heaven—that given to us in the Scriptures of the Old and New Testaments—and none other is adapted to the wants of his religious nature. To demand of the educator the complete development and culture of that young, immortal mind, without the appliances of revealed truth, would argue as great folly as for that same parent to send to the teacher his son, having but *one* eye, or *one* arm, and demand he should be sent back with *two* sound eyes, or *two* sound arms. The age of miracles has gone by. Enough upon this point.

Though the subject of American Education is an old and a hackneyed one, yet in none of its themes, phases, or applications, is it exhausted. In a free government, where we recognize no order of patrician, or plebeian, and under a constitution knowing not *one* of the three great elements of aristocracy—its very life depending upon the virtue and intelligence of the people—this subject never can become old, in the sense of being ready to vanish away, till the predicted times of the New Heaven and the New Earth shall have come. From the position to which in the providence of GOD I have been called, I have endeavored to gain some definite knowledge as to the practical workings of the system of our higher Seminaries of learning, if, indeed, we have any system. We have

at least a professed object in view, and this is a good one. It is to diffuse intelligence in the mass; it is to educate all the people. And so much is said of and about " popular education," I am half persuaded that the impression is quite general that the *thing itself* is already accomplished. I am sure we have taken too much upon trust—more, much more, then facts will warrant. While the Governments of the Old World have gone to one extreme of representing the people not only incapable of improvement, but in a condition of ignorance and degradation greater and more hopeless than truth would show, was an opportunity offered for the experiment, may we not have leaned too far over to the opposite pole, in believing there is in universal humanity not only the capability of a prodigious expansion, but that *it*, humanity, at least in our own country, is approximating a culminating point. The theory may be correct. It undoubtedly is. If not, then our doctrine of self-government falls to the ground, and the whole superstructure of our boasted free government falls with it. But those who adopt the principle of self-government, as within the compass of every man, supposed *that self —that man*—to be enlightened to a limited degree, at least, as to what is implied in the IDEA OF A PEOPLE GOVERNING THEMSELVES. That Liberty is not lawlessness. Without intelligence and virtue, which are necessary pre-requisites to self-government, it is impossible long to maintain republican institutions. Ignorance and corruption are incompatible with the genius of our institutions. Now, what is the tendency of the age? Which way are we moving? That great changes are taking place, and that, too, on a large scale, and in the very structure of society, is most apparent. While it is easy to assign causes that have combined in eventuating the changes, the moral bearings of these changes upon the country at large are not so apparent. They must be certain and powerful—but what their character? This is the question to be solved. One example of the many changes silently but ceaselessly going on, are the ratios of increase between the civic and rural population, especially in the free States.

The increase in towns and cities in the State of Ohio, containing over 5,000 inhabitants, was, from 1840 to 1850, 200 per cent. Other classes covering our vast fields agricultural, increase 22 per cent. In 1840, the rural population to the civic, was as twenty to one; in 1850, as nine to one; in 1860, the civic will nearly equal the

rural. The relative increase between the two, approximates a like ratio in the States of Massachusetts, New York and Pennsylvania. There are good grounds to conclude that the increase of the civic will be greatly accelerated, in this State especially, and throughout the Northwest. There is a tendency to crowd the cities—to centralizing—to going with, and dying among, the multitude. The same has been the case in England, and on the Continent, and hence the serfdom, where not one-fourth of the population are engaged in agriculture. It is not simply the merchant, mechanic, and laboring men of every class, who crowd to cities, but all professional men, if they can get there.

In spite of the extravagant panegyrics on the farmer and farming, such as "*the honest yeomanry*," "*hard-fisted democracy*," and the "*dignity of labor*," "*the primitive employment*," almost every farmer's son, the moment he gets the rudiments of science, pushes his way to the city, not stopping to inquire whether he is wanted there or not. At any rate, he has "laid down the shovel and the hoe," to resume them no more. It is easy to see what a sad train of consequences, touching the physical condition, commercial interests and productive wealth of the State must result from these changes, but to estimate correctly their moral bearing, requires more extended observation than I dare arrogate to myself. I wish some of your wise men would give their pens to this subject.

About this point, may we not find a reason why so many temples of worship in the country, once flourishing, are now going to decay? and the very graves of the Saints are grown over with briers and thorns, or thrown out to the commons?—a reason, additional, why so few young men are on their way to our Theological Seminaries. Do we look to the young lads growing up in our cities to furnish the next generation with ministers? We must look there, if any where.

Is it not imposing too heavy a burden, too mighty a responsibility upon the Church and the Christian ministry in our cities, that they must have the spiritual oversight of most of the so-called educated young men of the land? While the power of good or evil is certainly in our cities, and on all moral questions they act in concert, should it prove to be the latter, it must be remembered the power of resistance on the side of the country is diminishing in equal ratio.

Can anything be done to render agriculture more attractive? Has

anything been done? Is it embraced in our system of education? Has, not the politician, but the general government, ever done anything for the encouragement of the young agriculturist? I find that during a period of seventy-five years, up to '55, $29,500 have been appropriated to this cause, exclusive of the expense of publishing Patent Office Reports! How may millions, to hunt a few Indians among the swamps of Florida!!

What have our State Governments done?—and—but I forbear. Our young men, their relation to the country, the Church, their education and salvation, are themes of momentous interest.

Now we *would* not, if we *could*, neutralize all the causes that *are* operating, and that *will continue* to operate in the eventuation of these changes. Some of these causes are the results of a progressive civilization, and they are as permanent as the forces by which they are impelled into existence. Among these permanent causes are, first, our great Railroad system: The thousands employed as agents, sub-agents, car-builders, must have their home in the city.

Second. Steam, when applied to the mechanical arts, is mainly generated in the city; here all the coal comes by which the fires are kept up for creating steam, coal is a civilizer—so is steam—so are Railways. No intelligent young man with his saw and chisel will spend a whole day in making a shoe-maker's last, when by the force of mind alone he can make these senseless agents accomplish twenty times as much work, in a given number of hours.

Again, owing to the advancement in the industrial arts, the farming throughout the country, to a considerable extent, is carried on by those who reside in cities. The sowing, mowing, reaping, threshing, is virtually done by men who eat and drink, toil and think in the city and amid the hissing of steam, and the buzzing of machinery.

Among transient causes we have time only to refer to one or two. The increase of wealth in the hands of individuals lifting their sons above the necessity of labor is a leading cause among those of a transient nature.

Amusements are more abundant in cities—Idleness is more popular—there are a thousand nameless attractions that draw young men to the cities, and multitudes to ruin, that are only evil in their workings, and issues that we denominate transient, because there is no valid reason why they should exist. To these the correction should be applied. No man has a right to be idle C. N. M.

CORRESPONDENCE OF THE CINCINNATUS.

BY A TRAVELING AGENT.

Agricultural Fairs have become a fixed fact and are being greatly encouraged by those for whom they are formed, as they should be, and with "Excelsior" for their motto, our American farmers are destined to outstrip the older established countries in Europe. By invitation, the writer lately attended a Farmers' Lyceum, whether an "offshoot" or the "root" of the first, ergo, Fairs, is no matter, but if at all supported generally as this one is, there is evidence positive of its being a powerful adjunct to County Fairs, and as such should receive a like encouragement from our sturdy yeomanry.

THE FARMERS' LYCEUM

alluded to, was held at the house of the Rev. Mr. Watkins, a mile and a half from College Hill, composed of neighborhood farmers residing in a circle of about fifteen miles. It has a President and Secretary and is in fact a debating Club. The subject discussed at this meeting was wheat raising. In perfect agreement with the sentiment advanced by Prof. Mattoon, who was present—had we been told in advance that we would have to sit and listen to the discussion of so dry a subject for some two and a half hours, it would be expected our patience, to say the least, would be greatly taxed; but instead of this, the deepest interest prevailed, and the results of the experience of the intelligent farmers elucidated on the occasion would be matter enough for a lengthy article. (Such an one may be bound in another part of this No).

Another commendable feature of these Lyceums is, that the farmers bring their wives and children and baskets of provisions. The result is, that the little folks have their games, the ladies their chit-chat, or as "gallery visitors" they improve the opportunity of hearing their liege lords debate—a vis-a-vis they may not enjoy at home—after which, or before, as in this instance, under the wide-spreading walnut tree, mutually discuss together the good things prepared for the inner man, by their own fair hands, creating thereby a fine state of social feeling, and a softening down of the asperities that too often attend human life. This Lyceum meets once a month from farm to farm, as the majority decide, and fix upon a subject connect-

ed with farming interests for discussion at every subsequent meeting. It is hopeful that such Lyceums will yet be established in every community. The HARVEST HOME is a different thing—an *annual* gathering, of which there was one on the 29th September, at Miami-town.

In the vicinity of this latter place, as well as Cheviot, in Hamilton county, there are several amateur agriculturists, taking great interest in the science of farming. Mr. JESSUP, on the Harrison turnpike, about three miles east of that place, by dint of good management and favorable seasons, has succeeded in "bringing to" an old farm, raising three crops of wheat successively, with an increase on the first of five, and now ten bushels to the acre. He has sown the ground again this fall with wheat, clover and timothy seed.

SHAKER SOCIETY AT WHITEWATER.

While in the neighborhood of Harrison, I visited the celebrated Shaker farm in Crosby township which consists of about 1400 acres. It is a fine specimen of scientific agriculture and horticulture.—Peculiar religious tenets aside, the Society give ample evidence of true knowledge in farming and gardening. Their community consists of three families—in all 200 persons, including the children placed to their care. Their chief business is the raising of fine stock, seeds and brooms. They have about 50 acres appropriated to garden seeds, yielding a profit of $3,000 per year. They have also 75 milk cows and one imported Durham bull and 20 calves. Of the last, there were six specimens taken to our State Fair. Extreme neatness is every where manifest. The barn and stables are arranged with remarkable taste and convenience. They have the Osage, Orange and Quick-set hedges grown and growing to perfection, and on either side the main road the additional ornament of fine black Locust trees the entire length of their farm, the whole of which is assessed at $75,000.

THE TEACHERS' INSTITUTE,

is a noble brick edifice, in the course of erection as a Seminary or College, situated on a rise of ground adjacent to Harrison, into which a former pupil of Farmers' College, Mr. G. W. OYLER, is to be inducted as Principal. Mr. GEORGE OYLER, his father, an old settler and extensive farmer in the vicinity, is the honored patron.

Going into the town, on the hill-side is a beautifully ornamented spot of two or three acres of ground, with cottage and out-houses

made to fit, the residence of Mr. Geo. G. OYLER. On his grounds he has a variety of young and thrifty fruit trees and shrubbery. Luxuriant clusters of grapes hang in festoons over a long wall and trellis work about five rods in length. He also has several fine hives of bees.

FRANKLIN COUNTY, INDIANA.

Beyond Harrison and extending up the valley of the Whitewater to Brookville, Indiana, the traveler marks the thrifty farmers on either hand. Among the real contributers to science might be named T. M. BREKENRIDGE, Esq., and the Messrs. ADAIR, BOAL, TITUS, COOLY and McCARTY.

The latter gentleman is a pretty extensive fruit grower. He has 600 apple trees, embracing the best qualities grown in the West and in New York, and four acres in grapes. When there, he was engaged in repairing his wine-press. Judge McCARTY usually disposes of his wine and cider at the press. In telling his experience, he remarked that some kinds of fruit were not affected by bitter rot, and his plan was to bud accordingly, and cut down the insipid, the barren and unfruitful, many of which he had destroyed and planted others instead. Seedlings of good quality he finds the best for vinegar—the Jeneting variety is the best; the Harrison cider and the Smith are also good. The Milar or Harmel is a beautiful seedling, of which the Judge has forty bearing trees. Among the good keepers, he reckons first, the Jeneting, the Rambo, Yellow Bellflower, Putnam Russett, Cannon Pearmain, Rhode Island Greening, Roxburg Russett and American Pippin. He is also trying the Lansingburg, and Seek-no-further. The Jeneting is the favorite; after the others have been affected by frost, this variety never fails, and is good in every climate.

In subsoiling grape plants, the Judge recommends the cutting off the little fibers near the surface for about two years, the lower roots, as a consequence, strike deeper, and in plowing, the plants are not so apt to be torn up. When the grapes mature they are not so liable to sour and drop off.

Leaving the Judge's residence I soon ascended the "hill country," and found it rough indeed; reaching the uplands, however, a few miles east of Brookville, "the wilderness had been made to blossom as the rose." This is on the Colerain Turnpike, and in that neighborhood are the Messrs. GOUDIE, WYRM, EVERETT, SHIRK, QUICK

BRADY, WHITNEY and ROBERTS, who are engaged in scientific farming, some of them considerable amateurs. Mr. JOSEPH GOUDIE has raised two acres of Chinese Sugar Cane looking remarkably fine, and purposes giving it a fair trial. Both he and Mr. BRADY have thrifty Osage hedges; the latter gentleman has one of the neatest farms to be found, but complains that with all his attention, his hedges don't do well, and he has been obliged to pull up several roods of it—the cold winters cut it down (the 400 rods he has under cultivation is three and four years old) and field mice, moles or insects from the ground, eat off the lower branches and cause it to decay. I hear of many large farmers in Preble county, Ohio, and now in my travels in Indiana, who are being very much discouraged at the prospect, after all their care, of being able to succeed with live fence. The plants are set four inches apart according to his directions.

Mr. SAM'L SHIRK, who owns a half section of land, is an old settler, and with his son are dipping into science. A portion of their farm is kept for grazing purposes, and their cattle and sheep are nearly equal to the best in Kentuky; indeed the son is bound to emulate the Bourbons, and the Faculty of Farmers' College need not be surprised, if at no distant day, these and other sterling agriculturists in Franklin county, should visit them, perhaps, with specimens of their soil for analyzations.

Of the various kinds of wheat raised, the Mediterranean does the best on the uplands of this county. Those fruit orchards, too, on these high grounds, evidently from the observations made, are far the most productive where protected by forests to break off the cold winds of winter.

At Metamora, in the "bottoms," but on the side hill particularly, Mr. H. BLACKLIDFE is giving the fruit business considerable attention.

Around Laurel, also, in the same county—Franklin—I found many enterprising farmers'. Between the two places, I was caught in a drenching rain, and happily found a port in the storm wherein to newly rig and prepare for my journey at a good farm house of a widow—not soon to be forgotten for the excellent cheer of the family. Those MURRAY boys are worthy young men, uniting their bold endeavors with the younger members, for the support of a widowed mother and the adornment of scientific agriculture.

Mr. SAMUEL FISHER, at Laurel, has a fine orchard and grapery on the hill, back of the town. He finds the measuring, stepping, or green inch worm very destructive to fruit in the early part of the season, causing it to fall continually, and where it is allowed to remain on the ground, the insect rises again in the seed.

THE EIGHTH ANNUAL STATE FAIR OF OHIO.

THIS great Harvest-home gathering of our noble State has become a matter of history. The exhibition of results in the products of the farm, and workshop, of the garden and orchard, has been enjoyed by a countless multitude, and the triumphant success of this the eighth annual State Fair of Ohio has been heralded throughout the country. Every citizen must have contemplated this splendid exhibition of the agricultural and mechanical productions of Ohio with an unspeakable degree of pride and exultation. Errors and defects there were, both in design and execution, and with some, these, as ever, will be greatly exaggerated. The Board have acqitted themselves nobly, and deserve the united commendation of all, whose interests they have supervised. The impressions made by the mighty gathering of the people to witness the display of the Farm and Mechanic shop, will not soon be effaced from the mind. These impressions will be taken home to occupy many an evening hour in thought, and furnish subjects of fruitful remark and amicable discussion, by the way side, in the shop and on the farm during the coming year. The exhibition was emphatically a success. Not that it was the very best in every department, that could have been made, but it combined so many most interesting features that it is safe to say, it has rarely been surpassed. To enter into a description of those features of the Fair most commendable, or a criticism of such as might be deemed worthy of it, would at this time neither be advisable or profitable. The floral and pomonal displays, were both superior. The former was greatly enhanced by the taste and skill displayed in the arrangement, and design, in this department. The floral tent was one of great attraction, and deservedly so. The grotto rock-work and fountain were executed with most exquisite taste, and the whole arrangement of grounds, tents, etc., for the Fair was well designed. For this the managers were much indebted to

M. G. KERN, the Landscape gardener of the Farmers' College, under the general supervision of the active and energetic J. K. GREEN, Esq. These men spared no pains to make the Fair what we had a right to expect under proper direction, it should be.

A tribute of praise is due to our sister State Kentucky for her fine contributions in the Stock department. *Such Cattle* none but Kentucky can furnish. New York was here well represented in the pomological display. Messrs. ELLWANGER, and BARE, THORP & Co. exhibited many rare varieties of plums, pears, etc. The former had a display of seventy-two choice varieties of pears many of which have not yet been generally fruited with us.

In addition to an extensive variety of fruits, the experimental department of Farmers' College had on exhibition some forty varieties of wheat, which had been grown upon the farm the past season. Also several kinds of barley, oats, vegetables, etc. This from the very nature of things must become a most interesting department of this flourishing Institution. Thus after repeated trials of the grains, grasses, fruits and vegetables under the direction of competent professors, the best shall be ascertained, they will be returned to the farming community, without additional labor and expense on their part. Such a department should receive the liberal patronage from the Patent Office of the general government, for services, valuable services, which might in this way be rendered.

No one can for a moment doubt the utility of these gatherings of the people, to compare notes and join in generous rivalship in exhibiting the fruits and products of the country. And if from the magnificent display just closed our citizens return to their homes anxious to contribute their part to the general improvement, the great outlay of labor, and expense made to be enjoyed but for a few days will not prove an unprofitable investment.—ED.

BENEFITS OF AGRICULTURAL FAIRS.

No fact is more apparent to the reflecting mind, than the immense benefits Agricultural Fairs have contributed to our material prosperity. They have contributed more to our vigorous growth as a nation, than all the gold California can pour into our country for ages. They have awakened a spirit of inquiry in the breast of

thousands, who have elaborated and made known their experience to the world, through Agricultural Papers, contributing their experiments to the general stock of information (which at the best is made up of atoms) garnered together,—a rich legacy of facts, from which the principles of Truth shall be deduced by the hand of the future historian. All this has been done quietly. The silent step of agricultural progress has not been noted by the world—as it should have been—for the simple reason that it took time to nurture in man the high obligation he owed to his Maker, his country and himself, to so use and develop that which was intrusted to his hand, that it might be improved, and the true design of our Creator carried out.

And what is an Agricultural Fair? Is it a place where the most superior specimens of agricultural products are exhibited to the view of the visitors? What then? is that all the object, the aim, the end to be accomplished? If so, let them go by the board.—But a higher object is to be accomplished—has been, and will con• continue to be—the interchange of thought among those who have produced the articles on exhibition. It is in this light that Agricultural Fairs are accomplishing the grand results which will continue to rank us as a practical, farming progressive people. It is not enough that we should see the superior crop of grain, etc., but we should have the man with us, that we may know by what process he produced it, so that his co-laborers may know and realize the facts which are brought before them in their most practical form. It is not enough that we see fat cattle, but that we see the husbandman who produced them, that our less fortunate husbandmen may, by inquiryand observation, be aroused to the necessity of doing likewise—so that the object of the Fair may be the means of perpetuating the progressive spirit of political and rural economy.

Fairs, rightly conducted, are great stimulants to goodand thorough cultivation of the soil. Nothing is so well calculated to create as healthy a feeling, or develop so thoroughly the true dignity of Nature's noblemen as this theater, where all may meet in the exhibition of the arts of peace and usefulness: where those who have failed to realize their fond anticipations from the exhibition of their products, rejoice in the success of their neighbors. It is this feature which endears them to all good men who know the wants of our farmers, and who have, from the earliest stage of existence,

stood by them believing they were destined to accomplish as much good in their sphere of usefulness, as Education has in hers.

The benefit accruing from Agricultural Fairs are of a two fold nature, and apparent to all. Where the Fairs are made an object of attraction, you will find the greatest amount of thriftiness and prosperity prevailing in the sections which contribute to, and take an interest in, their prosperity. The benefits flowing from them are not to be estimated in a pecuniary sense. There are benefits conferred on the agricultural interests through the influence of this institution, which command our most hearty admiration and respect for those public benefactors of our race who have nurtured and expanded this germ, so that agriculture should take once more her rank as one of the most honorable pursuits of man.

FARMER EYESOPEN'S SOLILOQUY.

HERE am I, nearly fifty years old, and never saw such a place in my whole life before as CHARLEY led me into to-day. Heigh ho! a *nursery and green-house!* Well, I do declare, it is worth examining—what a curiosity!—what a collection! I would not have thought it possible for one man to gather into one enclosure, and grow from the same soil, such a vast variety. It must have cost a large amount of money, and yet they offered to sell any of the varieties for a trifle. I declare it is wonderful!

Apples—I declare, there was no end to the Apple Trees, (young,) growing there, and such a vast variety of kinds! I never can learn the names of all, and what a knowledge Mr. H. showed of Fruit and Fruit Trees. I declare, he would discover the name of any variety in the whole Nursery, by examining a short slip without leaves or buds.

Then there were other Fruit Trees,—Pears, Peaches, Quinces, Cherries, Plums, etc.,—their names were numerous, and their number was legion, but many of them can not be grown successfully about here,—but there were Strawberries—what wonderful ones! and other berries and grapes in such tempting clusters—I declare, it makes my own home—which I have been used to so long that its nakedness is as familiar as the nose on my own face—look real shabby,

and I discover that a few dollars expended four or five years ago, and a little care since, would have supplied me with fruit and ornamented my home by this time.

Well, I have ordered half a dozen grape-vines, little creeping things, not larger then Cucumber vines now, but they will grow—they have to be taken down in the fall and protected from the winter; but this is not much, and the thought of an added home comfort is reward enough. I had to buy a book for CHARLEY, on Grape Culture, when coming past the village, but if I can do anything to fasten the affections of my boys to their home, I am resolved to do it. CHARLEY is something like that grape-vine—his affections need support—something for the curling tendrils to cling to.

The other boys did not pay so much attention to the fruits—but they were all alive to the ornamental, and LUCY—she must have half a dozen rare roses, and Dahlias, etc. I did not care so much for these, but they love them, and I believe I used to.

I declare, I have made quite a bill to-day with that Nursery man. What with his gooseberries, and currants, and strawberries, and grapes, and other rare fruits, he has made me a profitable customer. Well, may-be good will come of it yet.

Let me see, now I have them, I must put them somewhere—I overheard LUCY saying the front yard was the place for the Roses. Then my Fruit Trees must not go there. Let me see, where is some out-of-the-way place, where, if they come to nothing, they will not be in the way of growing crops. After all they have cost too much to be shirked off into odd corners. How will it do to drain the north garden, and put them all in there, and take first-rate care of them. I 'll do it. My heart begins to enlist in the work, and if these do well that I have now, I believe the garden is as appropriate to fruit as potatoes. I hope I am getting my eyes open.

G. W. H.

M. DOYERE, of Paris, has proposed a method of keeping grain sweet and undecomposed for any length of time, by subjecting it to the action of the vapors of a volatile liquid called the bi-sulphide of carbon.

DOES WHEAT TURN TO CHESS?

To settle a controversy on this subject, BENJAMIN HODGE, of Buffalo, N. Y., offered a premium, some months since, of one hundred dollars, to any one who would demonstrate that wheat would turn to chess—to be awarded under the supervision of the New York State Agricultural Society, and under such rules as a Committee appointed by the Society should prescribe. This premium was lately claimed by SAMUEL DAVIDSON, of Greece, in this county, who had in his possession, as he believed, the evidence of transmutation. A Committee, appointed by the Society, consisting of Prof. DEWEY and L. B. LANGWORTHY, of this city, and J. J. THOMAS, of Union Springs, with Col. JOHNSON, Secretary of the Society, met at Rochester recently to examine the evidence. Mr. THOMAS is one of the Editors of the *Country Gentleman*, and we copy the following account of the examination from that excellent paper.

The experiment to prove transmutation was the following:—"A quantity of earth was passed through a fine sieve, to separate all chess seeds. It was placed in a pan, and several heads of wheat planted in it. When the wheat came up, it was subjected to all the hard treatment that usually produces winter killing, viz: flooding with water, and alternately freezing and thawing for several times. Late in the spring, the whole contents of the pan were removed and set out in open ground. When the plants of wheat threw out their heads, there appeared chess heads also. This mass of wheat and chess plants was brought in and placed before the Committee.—Stalks of chess were shown, the roots of which were found to proceed directly from the planted heads of wheat which yet remained entire, and in some instances they were found to issue from half decayed grains of wheat themselves. This was looked upon as conclusive.

The roots were taken by the Committee and first soaked in water, and afterward gently washed, by moving them backwards and forwards slowly through it. They were then carefully examined by microscopes. The roots of the chess were now perceived to issue, not from near the end of the grain of wheat, as usual on sprouting, but from the side, and in fact from almost any part. Further examination showed that they merely passed through crevices in the de-

cayed wheat grains, and they were separated from the grains without tearing, being merely in contact without any adhesion or connection. Some of the more minute chess fibers were observed by an achromatic microscope, to extend over the inner surface of the bran where they had gone in search of nourishment, (which is known to abound just within the bran,) in the same way that grape roots have been observed to spread over the surface of a rich decaying bone.—But they easily separated, and had no connection with the grain. It was satisfactorily proved that the chess plant could not have come from these grains, by the fact that the same single stalk of chess was thus connected with five or six different grains—which could no more have originated it, than five or six cows can have one calf.—This examination, therefore, did not prove anything in favor of transmutation; and as there were many possible ways in which the chess might have become scattered on the soil, the whole experiment was admitted by all parties to be inconclusive.

The claimant is, however, perfectly "satisfied" that the wheat turned to chess; and he is also so well satisfied with the candor and accuracy of the Committee, that he is confident he will yet convince them of the fact of transmutation, as experiments, conducted by them with great care, are to be performed under his direction another year.—*Genessee Farmer.*

An article from one of our correspondents on this mooted question corresponds with our own views, and as it is a subject of interest to many, we here give it place.—Ed.

This notion, of wheat turning to chess, once so prevalent, has, if I mistake not, lost many of its advocates since the days of better farming have come, and I believe, will some day be entirely exploded. It is a very convenient theory, though, to cover up the faults of careless wheat culture; and many advocates of it will still, no doubt, be found among those who will not take the trouble to fully test the matter. Much time will be required to wholly disprove the theory. The greater portion of wheat is full of chess, and considerable labor is necessary to separate them. The fields, too, are full of it; for successive crops have fallen upon them, and it has often been sown there. It is known to be a hardy plant, the seeds of which will probably germinate after having lain in the ground several years.—That seeds of many varieties will thus lie in the ground for a long period, and then send forth their plants, is an undisputed fact. For

instance, every farmer knows that white clover will spring up abundantly in fields where none has grown or been sown for five or ten years, and where it must have lain in the earth during the whole period; unless we adopt a still more extravagant theory than that which we have been considering, and suppose that not only wheat, but corn, rye, oats, barley, pumpkins, and potatoes, all change to chess. It is a curious fact in point here, that wheat found in the folds of linen enclosing an Egyptian mummy, germinated and grew luxuriantly, though it had, doubtless, been laying there 3,000 years. This fact has been several times published. I am clearly of opinion that if no chess was in our fields, and none was ever sown in them, or carried there by bird or other animals, we should never again hear of such a change as of wheat to chess, even though all the seed sown were shriveled, (as was the case in 1849,) or sown on the top of the ground, or injured by a severe winter, or pastured off in the spring—all of them supposed to contribute to this result. I will state some of the facts which produced in me such a conviction of the truth of the above opinion, that conclusive testimony alone could change it.

It is now probably 20 years since my father determined to raise wheat alone, instead of wheat, rye, chess, and even cockle, as he and his neighbors had been doing. The rye, being taller than the wheat, was easily destroyed by cutting it out before harvest, and the cockle was likewise soon overcome. As to destroying the chess, the neighbors laughed at him, saying that the first hard winter would again change the wheat to chess, and his labor would all be lost.—Nevertheless, he undertook the experiment. I was then a youth at home. We picked the seed carefully, head by head. Lest a single grain might have got into it, we run it two or three times through a fanning mill containing a good screen, each time entirely separating the screenings from the seed. We then sowed it on the cleanest ground that we had. We went through a similar process the two succeeding years. Whenever a head or grain of chess was found in harvesting, threshing, or winnowing the wheat, it was carefully pocketed, carried to a fire, and burned. By this time is was almost perfectly clear of the noxious weed, and would have been entirely so, I have no doubt, had there been none of the seed in the ground. After this, it was only necessary to screen the seed well in order to secure at harvest a crop of almost pure wheat. Several years have

passed since then, and I think I may safely say that not a grain of wheat has changed to chess on that farm, though it has been exposed to all the casualties that are commonly supposed to produce the change. I will even venture the prediction that not a grain ever will change. It matters not what field has been sown, what the circumstances of sowing, what the character of the winter may have been, what casualties may have befallen it—such as cattle pasturing it, or fly eating it—the result has been invariably the same; as far as chess was concerned, almost entire freedom from it. Our neighbors, seeing the success of the experiment, have adopted a similar practice, and with like result; so that the opinion, once generally entertained, has now few advocates among them, or in the adjoining counties.

I have detailed this experiment at considerable length, not merely for the purpose of disproving what I conceive to be an erroneous opinion, but for the beneficial effect its disproof would have on careless farmers. Many who now raise from three to ten bushels of chess per acre would, if they did not believe this pernicious doctrine, soon raise as much wheat in its stead. It will take some time, as well as labor, to rid old farms of this unprofitable weed. But three years will more than repay both, in the larger yield of wheat, and the better quality of flour.

Besides the facts which I have given, I will say a few words by way of argument of the question. The theory is contrary to nature. We do not find that other plants change. Then why should this? Different varieties of the same plant intermix; but the seed of one plant does not produce another distinct and altogether different from its parent plant. It is just as reasonable to suppose that chess will change to wheat; yet we never hear of such a change as that. If there are changes, why are they not mutual? Because the laws of GOD forbid it, which laws are written, not only in the works of nature around us, but also in the book of Revelation, which speak thus: "The herb shall bear seed after its kind, and the fruit tree after its kind." Again: "Do men gather grapes of thorns, or figs of thistles?" And again: "A good tree can not bring forth evil fruit: neither can a corrupt tree bring forth good fruit;" or, to change the terms, wheat can not bring forth chess; neither can chess bring forth wheat.

Chess often grows in meadows, from which it has been supposed

by some that timothy will also change. The one change is just as likely to take place as the other; but is it not most strange, apart from all other considerations, that two plants, so different as wheat and timothy, should each change regularly into another and the same plant? If the ground was clear, the notion that timothy changes would soon be exploded.

Chess is probably a hardier plant than wheat, and thus flourishes where wheat has been frozen out, or, from any other cause, has not grown well. It seems to commence its growth later in the spring, so that where the wheat is good, it is choked, and makes little show; but where the wheat has been injured, the small stalks spread into large stools, and produce abundantly. The same result follows where the seed sown has been partially picked up by birds, or left uncovered and perished.

Such a change is contradictory to all known chemical principles, and as inconsistent with reason as that a walnut tree should bear oranges, or a fig tree produce oysters. Yours, respectfully,

Brookville, Ind. Jos. Brady.

PLANTING TREES IN THE FALL.

"Do you approve of fall planting?" is a question asked us every day. Our answer is, yes, under these circumstances:

1st. When the ground is of such nature, and in such condition that water will not lodge around the roots of trees during winter.—To plant trees in holes sunk in stiff tenacious soils, is a certain method of killing them.

2d. The trees should be perfectly hardy. All delicate or half-hardy trees should invariably be planted in the spring. If it be necessary to take up in the fall, they had better be laid in by the roots in a dry soil, sheltered from the cold cutting winds, and, if necessary, protected with plenty of boughs of evergreen, or something of that nature.

3d. We do not approve of planting evergreen trees in the fall, unless the very hardiest sort, and that quite early, say to September or first of October, in time for the trees to re-root, partially, before hard frosts and they should be sheltered from the sun and wind by a thick screen of evergreen-boughs, well secured around them.

4th. Plant trees early—as soon as circumstances will permit after the wood is ripe. Don't wait till the leaves fall, but cut them off, being careful not to injure the buds. Late planting, however, if well done, may be equally successful.

5th. Secure all trees from being blown about by the winds, and mulch with half-rotten manure or leaves three or four inches deep.

Asparagus, rhubarb, gooseberries, and currants should all be planted in the fall, and as early as possible. Also, hardy bulbs, such as hyacinths, tulips, narcissus, crocus, crown imperials, and lilies. It is also the best season to top-dress and renovate neglected trees of all sorts, to make new walks and repair old ones, to lay down turf, and perform such operations as grading, draining, trenching, etc. Our springs are short, and hot summer weather very often comes too soon. It is therefore well to make a good use of every hour between this time and the freezing of the ground.—*Horticulturist.*

(From the Spirit of the Agricultural Press, Ill.)

INSECTS.

It is a well known fact that the alarming increase of insects and cold-blooded worms in making ravages upon grain and fruit trees, not only paralyzes the exertions, and disheartens the efforts of our farmers, but indicates a threatening destruction to the rise and progress of some of our most delicious fruit trees. So extensive are their ravages, that but very few of the fruit arrive at maturity without premature decay from the swarms generated by beetles which surround the trunks, when the tree is yet feebly developed. The reason that insects, so placed around trees, are injurious, is, because plants, including everything under the head of the vegetable kingdom, develop themselves from the center to the circumference; consequently the tangible influence of insects have a direct tendency to arrest the progress of their vital economy.

Instead of complaining, as interested and superficial people are always doing, and particularly at the present time, that birds are constantly troublesome, the great trouble is, that there is not enough of their interposition with the agricultural interests of the husbandman, who, thinking they are a nuisance around his vineyard, take

out their muskets and shoot them down. This is wrong, for it is a well known fact that tribes of insects have increated in proportion to the decrease of birds, who are their natural enemies, and who were designed by the Creator to check the too great propagation of these loafing, cruel savages that are found hovering around the trees in the twilight of the evening.

During the day, they cling to the boughs, infuse poisonous deposits into the sap of the tree, which in time works into the organization of it, and allays its growth.

If a man's business is farming, the higher principles of his nature should be, by experimental knowledge, to correct and make pleasant that vocation, by sparing the garden birds, who eat what they like, wipe their mouth on a limb, return thanks with a song, and wing their way to a quiet nook, to doze or meditate, snug from the *hawk* that skips above them during the day and the wily enemies who prey upon them during the hours of night.

It is to be lamented that birds are an the decrease for the last twenty years; and should it progress in the same ratio for the coming twenty years, it will be difficult and almost impossible to keep up the produce of the country. Do not, therefore, be averse to the feathered ones; it is, to say the least, a mean and contemptible baseness to shoot down the robin red-breast that renders the field and door-yard vocal, and beautifies creation.

FARMING.

If the young men of the present generation would take heed to the following remarks of an old and experienced man there would be less dissipation and less crime. Cities are, generally speaking, the hot-beds of crime and are the worst places in the world to raise children The farmer is the only true independent man and there is plenty of room in Uncle Sam's domains and even on the prairies of Illinois to accommodate any or all enterprizing young gentlemen out of situations.

Farming is a wholesome occupation. It promotes health and physical and mental strength. It induces the mind to "look through Nature up to Nature's God," and yet how many young men prefer leading a brief life of idleness and dissipation in the city to a long

life of health, usefulness and respectability in the country. Almost all persons as they advance in life seek peace and quiet in the retirement of the country; whilst the young are seldom content if not surrounded by the noise, filth and disease of a city. There is no more honorable employment than that of farming—no more free from care and anxiety. To the man who receives a fair compensation for his labor in the field, there is little or no care. He need not have an anxious thought of what to-morrow may bring forth. He lies down to a sweet sleep and rises in the morning in renewed strength.

How different is this from town life, where he is in a perpetual whirl—anxious, care-worn and feverish—with restless nights and uneasy mornings—uncertain to-day that to-morrow may not produce his ruin, and cast him penniless upon the world. For quiet happiness, the country is the place; and the only wonder is, that men remain in cities during the heat of summer, sacrificing the health of their wives, and lives of their children, when they can afford to place both in the country, to inhale the balmy and invigorating air and to recruit their enfeebled frame. Nothing would induce us to endure the heat of the city and destructive odors which are always arising in warm weather if we could make our escape to a shady retreat in the country.

"If more young men would become farmers, they would more certainly contribute to their health and happiness, and to the general prosperity of the nation, than by spending their time in the idleness of city life.

THE SORGHO AND IMPHEE, OR THE NEW SUGAR CANE.

THIS is the title of a book just placed in our hands, embracing a treatise on the Chinese and African sugar canes by HENRY S. OLCOTT.

It furnishes us an account of the origin, varieties and culture of this new plant. It treats of its value as a forage crop; the manufacture of sugar, syrup, alcohol, wines, beer, cider, vinegar, starch and dye stuffs. It also presents us with a paper by LEONARD WRAY, Esq. of Caffraria, and a description of his patented process for crystalizing the juice of the imphee to which are added copious translations of valuable French pamphlets.

The work is fully illustrated with drawings, of the best machinery. This work should be in the hands of all who are engaged in the cultivation of this new plant. Copies of it may be had by application to ROBERT CLARK, Bacon's buildings, Corner of Sixth and Walnut.

We subjoin for the benefit of our readers a cheap and simple process for making sugar or syrup on a small scale, which it is presumed will be all that is necessary for the present year. Cheap sugar mills of wood or iron, may be procured of HEDGES, FREE, & Co., corner of Main and Walnut.

The first thing is to permit the sorgho to fully ripen, as in that condition it makes the best syrup, and will be free from the grassy flavor complained of in previous experiments. This, as has been previously said, is known by the seeds becoming black and hard. When fully ripe, then, with a corn-cutter, a large carving knife, or, what is better, a small hatchet, cut the canes off close to the roots, strip off their leaves as far as the joints extend, and chop off the rest of the stalk, saving the seeds for future planting, if the cane proves to be of good quality; if not, give them to the chickens.

The next thing is to extract the juice from the stalks or canes.— This must be done by pressing them between rollers. If there is a cider mill on the premises, it will be all-sufficient; pass them through it just as you would crush apples, catching the juice in some clean vessel with as few chips or dirt in it as possible.

A VERY CHEAP MILL.

If there be no cider mill in the neighborhood, you must make a shift to construct one yourself, or get the nearest carpenter to do so; nothing but wood being required for all you have to do. The way to go about it is as follows: Choose some straight pieces of maple, or any hard wood, twelve or fourteen inches long, and the other forty-eight inches. These are to make your two rollers, and as nearly round as you can get the log, so much less trouble will there be to fashion the work. Having got your wood, take the blocks to the nearest carpenter, and tell him to make you two *journals* on the ends of the shortest piece, two and a half inches less in diameter than the block will be when perfectly round. If he has a turning lathe he will be able to do it all in a couple of hours. Let him make the axles or journals seven inches long each. You have now one roller finished; the other is like it, only after making a journal on one end, he measures along the same length as the other roller,

which will be sixteen inches, and then cuts *into* the block another journal like the others, leaving beyond it eighteen inches of sound wood to spare of the same girth or diameter as the roller part.—Through this eighteen inches that you have left over, cut a square hole or socket, large enough to put a good stiff wooden lever in or through it, so that when your rollers are set up on end in a frame, like a windlass, you can walk round with the lever, and so turn the mill. If there is a blacksmith in the neighborhood, it would be well to get him to put an iron hoop above and below the lever hole or socket, to prevent the strain, which will be considerable, from splitting the top. You have now the rollers complete ; the next step is to make the frame that holds them together. Take two pieces of timber, nine feet long and nine inches square, if you have them ; if not, round barked timber will do ; dig two holes in the ground six feet deep and four feet apart wherever you wish your mill to stand. Put the posts into them, and fill the earth in again, beating it down so as to hold these uprights as stiff and immovable as possible.—These are the supports of your mill, and have to bear all the strain, so you must see that they are strong and firm. Now, get a slab of wood, six feet long, sixteen inches broad, and eight inches thick, set your too rollers on it, standing upright, and close together ; mark the two holes for the lower journals, and cut them out six inches deep. You must now cut a couple of notches at the ends of the slab; fit these notches between the two posts, and pin them tight.—Now you have the bed plate of your mill. Set the rollers upright on it, with the journals in the holes you have out for them, and proceed to fit the upper frame plate in the same way, except that it must be made in two halves, owing to the socket part where the lever goes preventing your slipping it over both journals, as was done in the other case. For the upper frame plate, taking two pieces, six feet long, nine inches broad, and seven inches thick, fit them nicely together round the journals, and fix as before. To keep the two pieces from spreading when the strain comes, either clamp them together with wooden clamps and wedges, or hold them together with a dovetail tie. The mill is now complete ; put in the lever, and you are ready to crush the canes. Cut a small gutter round the roller in the wood of the bed plate, leading to a spout, to prevent the juice from running all round and being lost. The above need not cost a farmer ten dollars where wood is plenty, is sufficiently strong, and will crush a hundred gallons of juice per day, if required.

CRUSHING OUT THE JUICE.

Having brought your canes to the mill, and adjusted your lever, either let a man walk round with it, or attach a horse or pony.—Pass the canes through, two at a time, till you have sufficient juice for a boiling, say ten gallons or fifteen gallons; which should be crushed out in half an hour. Now build a fire-place with stones, or set up two forked poles, and put another across, on which sling your pot, which may be of sheet tin, but had better be of cast iron. Let it hold, say ten gallons. Get a small tin skimmer at a tinsmith's shop, and you are prepared to commence boiling.

BOILING AND CLARIFYING.

Everything being ready, slack a teacup full of lime, mix it to the consistency of cream, and set it by for use. Light your fire, with charcoal if you have it, for it makes no smoke, but if you have none, use dry kindling wood. If possible, so arrange your rude fire-place as to let the fire reach no more than half way up the sides of the pot. Put five or six gallons of juice into the pot, set it on the fire, and when it becomes milk warm, add one large tablespoonful of the cream of lime, and mix it thoroughly with the juice. Now take the white of two fresh eggs, beat them up with a teacupful of the *juice* from the pot, and when thoroughly mixed, pour back, and stir them well through the mass, bring it to the boil as soon as possible, *but the moment you see the first signs of boiling, lift the pot off the fire;* set it on the ground, and let it remain quiet for fifteen or twenty minutes. You will have perceived that after adding the cream of lime and eggs, as the simmering went on, a thick scum began to rise; this *you must not disturb*, but allow to gather on the top, till you take the pot from the fire as directed and allow it to settle fifteen or twenty minutes. At the end of this time, carefully remove the scum, and you will find if you have carefully followed these directions, that the juice has become clear and bright, ready to boil down to the consistency you require, whether of syrup or sugar.—having removed the scum, empty the contents of your pot into some clear vessel, which have convenient. Fill up your pot again with the raw juice, and proceed as before. This is the process of clarifying or *defecating*, and is absolutely necessary, if you do not wish to have a dark, dirty syrup, tasting of corn stalks, and almost unfit for use.

After clarifying and skimming the second pot full, as directed,

set it back on the fire, and boil down as rapidly as possible. As the quantity reduces by boiling keep adding fresh juice from the first clarification, so as not to let the syrup get too low in the pot, or it will get burned. If any scum rises, remove it with your skimmer, and by following these directions, you can not fail to make good syrup.

The preceding remarks suppose that you have only *one pot* to operate with; but it is very much better to have two, as it will save twenty minutes' time, and fuel, with each kettle of syrup you make; because, as I have shown, you have to wait twenty minutes after taking the pot from the fire, and allow the scum to rise and settle; so, if you have not another pot full of fresh juice to put on, it is so much time and fire wasted. With two pots in use, you replace the first on the fire as soon as you take the other off, and proceed to boil down.

SYRUP OF EXTRA QUALITY.

Should you wish to make a very extra syrup for table use, get a flannel bag, of almost any shape, sufficient to hold two or three gallons, and filter the juice through it after you have skimmed it, then boil down as before.

PROF. TURNER'S LECTURE,

"On the Origin and Destiny of the Three Races," delivered at College Hill, Sept. 11th, 1857, was the noblest specimen of eloquence and irresistable argumentation to which we ever listened. It was the expressed feeling of ourselves as well as of many others who heard it, "This lecture should be repeated throughout the whole country. Would that every American could hear it!" The subject announced was vastly comprehensive, yet such was the nervous brevity of style, the condensation of thought, that during the hour and a half in which he held his audience in unwearied attention, the lecturer conducted us to every land, and from the Patriarchial Ages down to the end of time. It was a panorama, yet not a scene exhibited, not a word spoken which diverted from the unity of plan, the great drift of the argument and the seemingly inevitable conclusion,

viz., that the magnificent valley of the Amazon is in GOD's Providence the destined home and theater of development for the African or black race, as the valley of the Mississippi is for the white race—that as the North American Continent is the scene for the destined highest development of the human mind, and the loftiest achievements of genius, so the Southern is reserved for the highest consummation of human affection, the full development of the heart, which everywhere in the negro preponderates over the head, or intellect.

To this great consummation the speaker saw—and made us, however reluctant, see—all the great arrangements of Providence in all ages to tend : the blanching of the white races in the northern climes; the darkening of the negro race under a torrid sun ; the rapid and early development of white civilization on the commercial continent of Europe, all penetrated with rivers and arms of the sea ; the tardy growth of the African in the impenetrable fastnesses of the rock-bound, riverless, harborless, mysterious continent of their births ; the earlier settlement of the United States by the whites ; the legalization of the Slave trade by Europeans, *who had ships* until three millions of Africans *who had no ships* had been conveyed to the States, their house of Egyptian bondage, there to learn the elements of Christian civilization ; the prohibition of that-trade thereafter ; the astonishing revalations of (now the lamented) Lieut. HERNDON, concerning the vast resources, the boundless fertility of the great Amazonian valley which lies under the same torrid sun with Africa and right over against the land the stupendous Amazon itself, with 15,000 miles of navigable waters, in itself, and its tributaries, and its ample mouth, of 150 miles in breadth, opening wide in invitation toward the land of the Negro races ; the gradual prevalence of this race already in the kingdom of Brazil, where they luxuriate under congenial skies ; and the gradual retreat of the blacks from the nortern States of Slavery, and their concentration and accumulation in the southern, where they already outnumber the whites in numbers and physical power.

But no sketch can do justice to the stern logic and bold, almost prophetic deductions of the Professor on this occasion. That all our readers may some day be favored by listening as we did to the lecturer himself, is our earnest wish.—ED.

SPRING GROVE CEMETERY.

On the opening of the present number of our Journal we present our readers with an entrance view of our beautiful Spring Grove Cemetery. It will be remembered that the Association establishing this Cemetery has been in existence only about thirteen years, or since 1844. What a " city of the dead" is now here!

This Cemetery was established on the same principles of Mount Auburn, near Boston, and Greenwood, near New York, with the benevolent and most praiseworthy design of furnishing a quiet and permanent resting place for the dead, and one which would not be subject to be disturbed by the advancing improvements and enterprise of our great city; while at the same time to the living, it should, by its tasteful, classical and beautiful arrangement, become a place fraught with scenes for contemplative recreation. It is but simple justice to say, that its Trustees have managed its affairs with great ability, which may be seen by their annual report to the lot-holders just published.

The recent improvements, in laying out, and decorating the grounds, in conformity with the rules established by the most eminent authors who have written on rural cemeteries, reflects great credit on the Landscape Gardener, and all connected therewith.—We here have the pleasure of having presented to the eye of taste, on a large scale, what we formerly were only permitted to read in books. Although this cemetery can not boast of as many beautiful and classical monuments, as other similar, and older institutions, yet it is not too much to assert, that there is not in these United States, one that surpasses it in the neat and tasteful manner in which it is kept. And here we would beg leave to state, that, while greater taste is displayed of late by the proprietors in respect to laying out their family burying lots than formerly, there yet remains much to be learned, and much to be done in this regard, to be in strict conformity with good taste. The unsightly hedge, and stiff iron fence which require great expense and constant attention, and which, when neglected but a short time, go into dilapidation, we are pleased to see are fast giving place to simple corner stones, with the names of owners, and number of lot, and section engraved thereon. And instead of the numerous head and foot stones that greatly mar the

beauty of the ground, tasteful monuments with names of interred beautifully engraved upon them, with such other embellishment of trees, shrubbery and flowers as are in good taste. While on this point, we would give some authority for our critique, as even the best taste is regarded by some as a quite capricious affair.

Says WASHINGTON IRVING: "The grave should be surrounded with everything that can inspire tenderness and veneration." How can this be done by having burial lots enclosed with stone posts, iron bars and chains?—the very sight of which is repulsive in the extreme, as it conveys the idea of rudeness and confinement." The tomb, having been through all the past the great chronicler of the taste and civilization of a people, this would certainly be pronounced, on visiting our Spring Grove, an eminently mechanical and iron age.

"Better," says CHATEAUBRIAND, "that the grave be arrayed in simple nature, and as the tombs of the Indians whose mausoleums of flowers and verdure are refreshed by the morning dew, embalmed and fanned by the breeze, over which waves the same branch where the black bird builds his nest, and utters forth his plaintive melody." But little better do we regard the rude hedge, furnishing too oft an enclosure to screen, instead of exclude those whose very tread is desecration to such a hallowed spot. With LONDON, we feel that a rural cemetery in the neighborhood of a large city, properly designed, laid out, ornamented, with mausoleums, vaults, tombs, columns, vases, urns, etc., tastefully planted with apprópriate trees and shrubs, and the whole properly kept, will become a school of instruction in architecture, sculpture, landscape gardening, arboriculture and botany, and to the contemplative mind we would add, a refiner and purifier of the heart.—ED.

UNIVERSAL DIFFUSION OF LIFE.

WHEN the active curiosity of man is engaged in interrogating nature, or when his imagination dwells on the wide fields of organic creation, among the multifarious impressions which his mind receives, perhaps none is so proudnof as that of the universal profusion with which life is every where distributed. Even on the polar ice the air resounds with the cries or songs of birds, and with the hum of

insects. Nor is only the lower dense and vaporous strata of the atmosphere thus filled with life, but also the higher and more, ethereal regions. Whenever Mount Blanc or the summits of the Cordilleras have been ascended, living creatures have been found there.—On the Chimborazo, 8,000 ft. higher than Etna, we found butterflies and other winged insects, borne by ascending currents of air to those almost unapproachable solitudes, which man, led by a restless curiosity or unappeasable thirst for knowledge, treads with adventurous but cautious steps: like him, strangers in those elevated regions, their presence shows us that the more flexible organization of animal creation can subsist far beyond the limits at which vegetation ceases. The condor, the giant of the vulture tribe, often soared above all the summits of the Andes, at an altitude higher than would be the Peak of Teneriffe if piled on the snow-covered crest of the Pyrenees. The rapacity of this powerful bird attracts him to these regions, whence his far-seeing eye may discern the objects of his pursuit, the soft-wooled vilunas which, wandering in herds, frequent, like the chamois, the mountain pastures adjacent to the regions of perpetual snow.—*Humboldt.*

AMERICAN INSTITUTE—FARMERS' CLUB.

The Secretary, HENRY MEIGS, *made the followiug report, September* 5th, 1857.

VITALITY OF THE DIOSCOREA BATATAS, OR CHINESE YAM, BY MR. P. DUCHARTRE.

THE attention of gardeners is now so fixed upon the cultivation of this Igname (Yam,) that all the facts in reference to it should be stated. I ask permission of the Imperial Society to lay before it some of them.

I have heretofore stated the remarkable energetic vitality of this tuber, and submit the following:

On the 1st of July, 1855, Monsieur FRANCOIS DELESSENT received from Shang-Hai a considerable quantity of these tubers—being of the crop of 1855, in China.

They came to France, around the Cape of Good Hope—a long passage—but they arrived in very good condition, (tres bon etat.)—

They were cut up in pieces (Chinese mode) about three out of each tuber, and put into a cask, and filled in with sandy earth. There was mixed with them a production which we were unacquainted with—at least as far as I know. These were a sort of stalks, about one centimeter (⅜ of an inch) thick, by from ten to twenty centimeters (four to eight inches) long, quite irregular in length—some a little branched with tubercules still attached to them, resembling what botanists call *rhizomes* (horizontal roots.)

I planted sections of the tubers, from one to four inches long, on the 7th of July, 1856, in a very light soil, near the southerly side of a wall. I left them out all the following winter, without the least shelter. Last May I examined the tubers, and found them as sound as when they were planted ten months before, (July, 1856.)

I believe that it would be difficult, if not impossible, to find another feculent (starch) tuber keep so well in the ground.

I find that it will keep in the ground sound under very unfavorable circumstances, for two years at least.

This is a distinguished merit—highly profitable to farmers—and deserves the particular notice of the imperial society.

AMERICAN INGENUITY.

Last week we published a list of five cases for which petitions are now before the Patent Office, asking that certain patents may be extended for a period of seven years. By reference to the last number of the 12th volume of the *Scientific American*, it will be seen that twenty-six patents were extended during the past year; thus showing that, although many inventions prove unprofitable, and oftentimes, perhaps, for want of proper managment, involve their originators in a complication of disasters, yet, in a majority of cases, we are inclined to think that the patentee either parts with his right for a snug sum of money, or engages in the manufacture and sale of his improvement, and thereby secures for himself not only a good but also a profitable and permanent business.

The fact that so many patentees are always anxious to get their patents extended, goes to strengthen the position we have assumed, that patented inventions are not by any means so generally unprofit-

able as many suppose. A contemporary justly remarks, that notwithstanding a prevalent opinion to the contrary, so "many inventors have acquired ample fortunes by their science, skill and intellect, that every poor man with a taste for mechanics hopes to meet with equal good luck. The earliest inventors undoubtedly had rather a hard time of it, but they were few in number; however, they must be honorably regarded as pioneers. Still, even in the infancy of discovery, many able men were amply repaid for their toil, not only in honor, but in hard cash; and in these times, the originator of a labor-saving or money-saving machine of merit—a machine which does really save labor and money, and actually reduces the cost of social necessaries—is pretty sure, if he be decently prudent, of liberal compensation for his pains. Most prominent inventions of a thoroughly useful character, made in this country, have amply repaid their originators, whether they were those of a self-acting mule, a revolving pistol, a carpet-loom, a coal-burning locomotive, a reaping machine, or a rotary press. This fact undoubtedly stimulates ingenuity, but this will not alone account for the requisition which this country makes upon its inventive talent. It is because we have an immense demand for manufactured cotton, that we have brought the machinery necessary for its production to perfection; and it is because we have great crops, defying the profitable use of scythe or sickle that we have the beautiful machines which now so wonderfully facilitate the operations of agriculture."

The statistics of the Patent Office alone show something more than that we are merely an ingenious, contriving set of whittlers and jack-nife adepts. It is true, however, that there is always a class of more or less really ingenious men, who are continually racking their brains to construct "perpetual motion," "flying machines," and inventions of like character, without the slightest probability of success, when, if the same amount of time was spent in scheming out useful improvements, such men would undoubtedly accomplish some good object for themselves, and confer an equal benefit upon the community.

REMEDY FOR COLIC IN HORSES.—One of our readers says that a pint of salt dissolved in a pint of hot water, and a quart of vinegar then added, and about half the quantity given, will cure the most inveterate case of colic. Should not the first dose effect a cure let the remaining half be given and the cure will be certain. He says he has seen the remedy tried in a number of cases and always with success.

BEEF.

For many years an extensive trade has been carried on between New York and other eastern cities and South America, in hides.—Many thousands of cattle are sacrificed upon the plains of South America for their hides alone, which amount to many cargoes annually, while the carcasses, affording the best of beef are allowed to decay upon the plains where they are slain. Recently one of the enterprising citizens of Kentucky returned from a successful trip to Mexico with a large drove of mules, which are summered in the Kentucky pastures and then offered in market. This experiment we have no doubt will prove a very profitable one and will probably be repeated by others for many years to come.

This fact suggests to us whether something may not be done by way of procuring beef from the South American cattle that are now being sacrificed in such large numbers. Beef has become an important item, both in our western as well as eastern markets, the price having advanced one or two hundred per cent. within the last few years, with a prospect of a still further increase.

Now, whether the cattle from South America can be transported to our Atlantic States alive by sea to a profit we will not pretend to say. It has been intimated that neither the wild cattle of Mexico or from the Savannas of Venezuela can be domesticated so as to eat or drink, and that they will die of hunger and thirst before they will partake of either while in confinement. But one thing is quite evident, that with proper arrangements the beef and tallow may be saved and turned to valuable account, if some enterprising individuals would go to that country prepared to introduce a more economical system in killing these cattle. An immence amount of salt beef is required for our army and navy, besides for domestic purposes, and we see no reason why a large proportion of this supply may not be derived from this source. There is no better or healthier meat than that of wild animals, and we think the experiment is well worth investigation and trial.—*Valley Farmer.*

CINCINNATI HORTICULTURAL SOCIETY.

(CONTINUED FROM PAGE 381.)

SATURDAY, August 20.

PRESIDENT WARDER in the chair. Minutes read and approved.

On assuming the chair the President apologized for his absence from the Society for the two previous meetings. He assured the members that the interests of Horticulture had not been forgotten during his Northern tour; that he had visited gardens, orchards and nurseries, carefully noticing the effects of soil and climate. At the present time he could only mention a few things that attracted his notice in the vicinity of Montreal, C. E. Among these the collection of stove and green house plants, belonging to JAMES FERRIER, Esq., President of the Horticultural Society, are many new and beautiful things. His collection of ferns is particularly rich and the specimens are in fine condition.

Among the numerous beautiful villas in and around Montreal, none were more attractive than Mount View, the property and residence of Mr. DON ROSS. The gentlemanly proprietor, with a most cordial reception, made his visitors feel perfectly at home, while they could not help admiring the successful efforts at floral adornments of the parterree, the culture of exotics in the green-houses, the grape borders, the productive vegetable garden and orchard, on a terrace near the top of the mountain, which reared its crest above and behind, frowning with beetling rocks upon the highly cultivated ground below, while upon the summit grazed the graceful Ayrshire cows, or ruminated upon the extensive panorama spreading for miles in every direction, bounded by distant mountain ranges, some of which mingle with the sky.

Upon the western slope of the mountain a beautiful spot has been selected for a cemetery. This has been laid out in the modern style, and being well covered with a growth of the native forest trees, in considerable variety, it is a charming spot, well kept by RICHARD SPRIGGINS.

South of the mountain is the *cot de neige* nursery belonging to WM. BROWN, an intelligent Scotchman, who has evinced great industry and good judgemnt in the growth of fruit-trees, shrubbery, etc. His fine specimens of Northern fruits and those adapted to the rigors of the climate, could not fail to attract attention. Among these the Apples, Farneuse, St. Lawrence, Alexander, Astrachan, Prince's Early Harvest, and Montreal Beauty (crab) here, as elsewhere upon the Montreal Island, occupied prominent places as successful fruits. Mr. BROWN cultivates small fruit also, and is quite a fancier of the Strawberry, rivaling the products of our own city. His varieties are chiefly European. The Fastolff is his favorite Raspberry, which received no other protection than the snow.

Montreal is remarkable for the numerous beautiful villas that surround it, and indeed form parts of the city. Trees of beautiful forms mingle with the houses, partially obscuring them with graceful shelter during the summer. Among these the conifers of our continent, elms, maples and aspens, the mountain ash, Lombardy poplar and horse-chesnut appear to be the favorites. The weeping-willow does not endure the rigor of the climate.

Upon motion of Mr. CALDWELL, the thanks of the Society were tendered to President WARDER for his very interesting remarks.

Dr. S. W. LINDSAY, JOHN H. JACKSON and ISAAC H. JACKSON, of Hamilton County, were elected to membership.

Report of the Committee on the Diseases and Casualties to which the Grape crop is liable was presented, and upon motion recommitted.

HORTICULTURAL FAIR.

Mr. SAYRE wished it announced to the ladies who have upon former occasions so ably assisted in arranging and decorating the Fair Grounds, that their services would again be very acceptable and duly appreciated.

All who have Evergreens of any description to contribute for the decoration of the Fair Grounds will please report or send them on Thursday, September 3d. Parties wishing space for exhibition will please apply at the Fair Grounds, on Wednesday afternoon, September 2d.

EXHIBITORS OF FRUIT.

By the President—Catawissa Raspberry—This new ever-bearing variety promises to equal the high encomiums that have been passed upon it. Plants set out this spring now have thirty, forty and forty-three bunches of fruit in all stages, from the blossom to the ripened fruit. The foliage and the fruit resemble the common red Raspberry. The flavor is fine, but the profusion of fruit and its continuous bearing make it remarkable and deserving of attention from lovers of this delicious species of fruit.

WM. SHROM—Seedling Peaches, raised by himself; very fine.

Mrs. HEAVER—Pears—Andrew's Pear, Beurre d'Aniatis Autumn Superb, Seckel, Rousselet de Stutgard, Bloodgood, Washington, Bartlett, Julienne, and two unknown. Plums—Bulmar's Washington Nectarine Plum, one, name unknown. Apples—Gravenstein.

WM. E. MEARS—Orange Bergamot Pears, Honest John Peaches, Coolidge Favorite, Royal Kensington, Rochelle Blakberry, George IV. Peaches.

President LYMAN—Pumpkin Apple.

O. HAMILTON, Gallitan, Ky—Apple for name.

J. S COOK—Grosse Mignonne Peach, Crawford's Early Peach; Prince's Imperial Gage Plum; Early Red, Rare, Ripe Peach.

Mrs. BICKHAM—Two Seedling Peaches.

J. LONGWORTH—Tomato.

S. W. HAZELTINE—Two apples and three pears for name.

WM. COLLIER—Two apples for name.

A. H. ERNST—Stone Pear, branch of Bartlett Pear with specimens Sterne's Genessee Pear, Summer Colmar and Seignere D'Esperce.

J. C. GADDIS—Julian Pear Apple, Mount Pleasant Sweetling.

M. MCWILLIAMS—Plums, pears, peaches.

WM. H. PYE—Peaches, three varieties; apples, three varieties for name,

WM. ORANGE—Three varieties of Seedling Apples.

J. A. WARDER—Ever-bearieg Raspberry, named Catawissa prolific.

Dr. WHIPPLE—Two varieties Pears.

J. E. MOTTIER—Julian Pears.

In absence of Fruit Committee, no report.

The display of orchards and garden products at the approaching Horticultural Fair promises to be splendid beyond precedent.

SATURDAY, September 5.

President in the chair.

On motion, a vote of thanks was tendered to Mr. J. N. LABOYTEAUX for his services as Secretary, *pro tem.*

The chair announced that all members whose annual dues were paid would receive their "Family Ticket" of the Secretary, which entitles them and families to the freedom of the grounds during the exhibition.

On motion, ordered that all entries of cut flowers and boquets be made previous to five o'clock P. M., of Wednesday, the 9th of September, (the day for opening the exhibition); and that the premiums therefor be then awarded.

A call was made for the report of the committee on the diseases and casualties of the grape crop; and Mr. BUCHANAN remarked that it was important that this report be speedily made, in order to put to rest the nonsensical statements now current in some parts of the country to the effect that the Grape-Culture and Vine-Growing in this country is unremunerative, and therefore impracticable. He had seen it stated in newspapers, published abroad, that this Society had yielded the point, and regarded the grape culture as a failure. He therefore hoped that this report would be submitted with all convenient expedition, to put such nonsense to silence. At the request of the committee, further time was allowed.

Much conversation was had concerning the Annual Fair, to open next week.

Messrs. DANIEL VINCENT, of Delhi, M. NORNY, of Cincinnati, and Captain T. SWIFT were elected to membership.

REPORT OF FLOWER COMMITTEE.

The only exhibiton of flowers consisted of several varieties of the Convolvulus, of great beauty, by Mr. JONES.

FRUIT REPORT.

S. WADE.—*Pears*—Bartlett, Flemish Beauty, Summer Doyenne.

Mr. ERNST.—Seigneur d'Esperean; a rich and delicious pear, worthy of general cultivation. Celmar of Summer; excellent, one of the best, but a shabby grower. Stone Pear; good for cooking. Stubler's Seedling; not of much value. Beurre Spence; handsome, but inferior. B. d'Amalis.

Mr. HATHAWAY.—The Bartlett and two others unknown; also, a seedling peach.

Mr. SEARLES.—A green pear, supposed to be the Summer St. Jermain; a first-rate and delicious pear; medium size.

Mr. BUCHANAN.—Muscadine; a good second-rate pear.

Mr. CRANCH.—Napoleon, Flemish Beauty, and four names unknown

Mr. JONES.—*Apples.*—A good specimen of the White Bellefleur and Yellow Newton Pippin, Baldwin and two varieties unknown. *Pears*—Bartlett and three unknown; of these of fine flavor and worthy of cultivation.

Mr. McWILLIAMS.—Beurre d'Amburg (?).

Mr. COOK—Stone Pear. *Peaches*—The Belle d'Vitry; one of the best; one (unknown) a fine peach; also a Cling Seedling; large size and fine flavor.

Mr. MEARS.—*Plums*—Imperial Gage and Blecker's Scarlet Gage (?).

Mr. GARRISON.—Stone Pear, Autumn Bergamot and one not known ; also, the Redman Cling Peach and the Summer Queen Apple.

S. S. CARPENTER. A pear for a name—the Stone Pear.

SEPTEMBER, 8. 1837.

A meeting of the Cincinnati Horticulture Society was held in the tents—the President in the chair.

On motion the Committees were requested to commence their investigations, and ordered to hand in their rewards by seven o'clock, to-morrow, Wednesday evening.

On motion, a committee, consisting of Messrs. BUCHANAN, MOSHER and WARDER was directed to prepare and advertize a schedule of premiums on wines not exceeding $50. The entries to be received until Wednsday the 16th, the examination and rewards to be rendered on Friday the 18th—after some discussion the motion was LOST.

On motion, the president was directed to invite the Public Schools to visit the grounds of the Society on some morning hours, at as early a period as possible—Carried.

INDUSTRIAL EXHIBITION—A STITCH IN TIME, ETC.—A young lady, passenger in one of the Mount Pleasant cars a day or two ago, came very near getting the hats of all the gentlemen, who noticed a singular and unexpected display of good sense and prudence on her part. On entering the car her dress caught, and was considerably torn, the rent presenting a very unhandsome appearance in contrast with the exceeding neatness of her apparel. As soon as she was seated she removed her kids, and diving into the recess of a tiny pocket, brought out a needle and a bit of thread, after uniting which with most dexterous manipulation, she set to work to repair damages, and very soon spread out the folds of her robe as complete and whole as if no accident had ever occurred. The materials of industry were then redeposited in their resting place, and the lady assumed her kids and an attitude of repose, smiling triumphantly.—*Boston Courier.*

PRECAUTION AGAINST PESTILENCE.

Constitutional Dialogue between Jones and Brown.

JONES.

WHY BROWN, how well you look, I say,
  In this a'arming season
To what you did the other day !
  Old fellow, what's the reason ?

BROWN.

Well I do feel an alter'd man,
  For which I owe thansgiving
I've also rather changed the plan
  And matter of my living.

JONES,

What would I give to be like you ?
  I'm ill and melancholy ;
I wish you'd tell me what to do,
  To look so fresh and jolly,

BROWN,

Then, first of all, betimes I rise,
  And wash myself all over,
Not cleansing only what your eyes
  Are able to discover.

My wife and children, too, I make,
  To arm the constitution,
Each morn their soap and water take,
  And do the like ablution.

Scrubb'd sweet and clean I've had my home,
  From garrets to foundation ;
And taken care, in every room,
  To 'stablish ventilation.

Beneath my kitchen ran a drain,
  Which oft the nose offended ;
The sink was faulty, it was plain—
  I caused it to be mended,

Then, also, on a certain head
  I've made a large reduction ,
One mild glass only, just ere bed,
  Is my extent cf suction.

The money saved in drink, I spend
  In good nutritious diet,
And warm apparel ; now, my friend
  You know my system :—try it.

Then, epidemics you may view
  With very slight misgiving ;
They seldom trouble people who
  Adopt my style of living.

JONES.

I think you're right ; and mean to say
  Your measures of protection ;
And so—please goodness—shall defy
  Contagion and infection.

EHRGOTT & FORBRIGER Lith Cin O

F. G. CARY'S RESIDENCE.
COLLEGE HILL.

THE

CINCINNATUS.

VOL. II. NOVEMBER 1, 1857. NO. 11

THE CLAIMS OF AMERICAN AGRICULTURE UPON THE PATRONAGE OF GOVERNMENT.

THE American continent has been the theater of some of the most stirring scenes and thrilling events in the records of the past. Revert but to the period of its remarkable settlement, of its colonial dependence, and revolutionary struggle, and you have presented in bold relief those characteristics which have marked our progress and secured our prosperity. This our present happy condition has resulted from the virtue, intelligence, and industry of the people; and these characteristics must still be maintained in all their integrity, if we are to retain our high position, which will be found more difficult in our prosperity than in the days of our adversity.

We have been, and must in the nature of things continue to be, an agricultural people, and this gives us more ground to hope that our future will be prosperous, our destiny glorious.

Farming—the cultivation of the soil—occupies at this time four-fifths of our population. And the rapid expansion, and spread of population by reason of that great modern improvement and improver, the railroad, is adding daily, numbers, wealth and influence with unexampled rapidity to those engaged in this vocation. The broad and extensive plains of the West and South are fast filling up with a busy, enterprising, and intelligent population, who have possessed themselves of farms of unlimited extent, and great fertility, ready to their hands.

A few items will suffice to show the magnitude and importance of the farming interests of these States. Note a few facts. There is

more capital invested in the single item of fences, according to census reports than there is in every department of manufacture combined. As far back as the census of 1850, the cash value of farms, and the fixed capitol employed thereon, amounted to five billions of dollars, and during that single year there were produced one hundred millions bushels of potatoes, three hundred millions bushels oats, one hundred and fifty millions bushels wheat, eight hundred millions bushels corn, one billion six hundred millions pounds cotton, and fruits and vegetables in untold quantities. Since that time these very products have been immensly increased, and vast quantities are now exported to foreign countries. We could now feed the starving millions of earth on the corn converted into whisky and be better off in the aggregate by the donation, than we now are by its consumption. It would be interesting to give the tunnage of these States, but it is aside from our present purpose. What a picture could be here drawn of our developed, and rapidly developing agricultural resources! They are literally incalculable. Yet this is the mighty giant interest concerning which we propose to venture a few strictures, and to condemn the policy that has been pursued in a national point of view in its behalf. Who will say that justice and sound policy do not alike require that our State and national governments should use all the means authorized by their constitutions to promote the object and secure the prosperity of this paramount interest, and have a provident eye to this largest class of our citizens.

Is it not a singular and significant fact, that while the manufacturing and commercial interests have engaged and engrossed the attention of our legislators, and the general government, and while our statutes abound in provisions for their protection, that encouragement, almost amounting to nothing, has been done for the advancement of the interests of agriculture. While agriculture has been in all our past history a most fruitful theme of the political declaimer, to win votes and gain the spoils of office, all, thus far has ended in talk, if we except the appropriations made to our patent office in its behalf. We might here also incorporate the earnest sayings, and appeals, and recommendations of sages and Statesmen, of Governors, and Presidents in favor of legislation, decided legislation, to note with what heedless and stolid indifference the whole subject has been treated.

The cry has been—and is—agriculture needs no governmental patronage; it is unconstiutional to make for it any such provision.

For the last few years petition after petition has been carried up to Congress from the people; Agricultural Societies, County and State, and United States have been formed, and passed resolutions recommending the establishment of an agricultural department at Washington, but our last Congress thought that the continuance even of a committee on the subject of Agriculture was uncalled for, and in their *wisdom* discontinued its appointment. We shall endeavor in our remaining remarks to show the claims of this giant interest to national and State patronage, and the grounds upon which such claims are based. These claims are founded upon considerations of a physical and intellectual nature, while these again ramify throughout our political, moral and social relations, indeed forming the very basis of our individual and national prosperity. To such considerations, important as is our destiny all should lend a listening ear.

First, in a physical point of view then; our agriculture has its claims to national favor and protection from the wanton waste and impoverishment of the soil under cultivation. Let our older States speak on this subject, let the voice of Massachusetts, indeed the entire New England six be heard. In some of them the great cereal, wheat, is now quite driven out, and in others it has ceased to be remunerative. In 1840, by the census report, Connecticut produced eighty-seven thousand bushels of wheat, in 1850, forty-one thousand bushels. Massachusetts, in 1840, one hundred and fifty seven thousand nine hundred and twenty-three, in 1850, but thirty-one thousand two hundred and eleven. Rhode Island once famed for the fertility of her soil, produced but three thousand and ninety-eight bushels in 1850.

By statistics collected and published by the commissoner of Patents, we find that in the great State of New York, while the number of acres of land in cultivation has vastly increased, the agricultural products have decreased. The number of horses, cows and swine during a period of five years had decreased from fifteen to twenty per cent., and the number of sheep nearly fifty per cent., while the agricultural products have by no means increased in corresponding ratio. Indeed the wheat crop has been reduced in its average from fifteen and twenty bushels per acre to less than twelve. And there is the same general tendency in all the wheat and grain growing regions of the West and South. Deteriorations of soil, and diminution of crops may be said to be a general law of American agriculture. In

Virginia, this steady atrophy of the soil has gone on in many parts to an alarming extent. Harvests of wheat and tobacco were obtained for a century from one and the same field without manure; but now whole districts are converted into pasture land, which without manure, produces no remunerative crop.

LEIBIG says, "that from every acre of this land, there were removed, in the space of one hundred years, twelve hundred pounds of alkalies, in leaves grain and straw."

What improvident culture! and yet this is the kind of culture now generally prevalent. Our rich and fertile lands are fast being impoverished by the vandal system pursued, and present more the appearance of an invading foe having swept over them, or an army of locusts, leaving a desert in their track. In speaking of this vast depletion, our reporter says: "One billion of dollars would not restore to original fertility the one hundred million acres of lands in the United States which have already been subjected to this exhausting process."

Now it is readily conceded that this impoverishment of soil is not universal. The lights of science, and intelligent observation, have enabled many farmers even to improve the fertility of their soils; and if this knowledge were universal, such results would become more general.

Who will say that under the provision of our constitution which gives Congress power to provide for the common defense and *general welfare* of the States, that it is without the grant or power to afford relief. All must concede that the general welfare can in no way be better advanced than by such means as will secure the largest resources from our soil, and have a wise reference to posterity in the manner of using it. The occupants of the soil are but stewards, and it should be required of them to be faithful to their trusts, and for this they should be made capable. And here we would present a view of this subject, different from that generally entertained by the learned and the unlearned, or if not entertained, universally adopted in practice. We maintain that there is not a science nor an art practiced by man which includes a greater variety of operations, or involves a greater amount of scientific principles than farming; and yet in fact almost every other art is popularly regarded as far more technical and intricate, and as requiring far higher qualifications, and a far more systematic and prolonged course of prepara-

tion for its successful performance. Were the next generation of farmers all over the civilized world to be educated comparatively with other men in something like the proportions of their calling, *human society would, at one move,* experience almost as great a transition as when it passed from the feudal ages to the dignity of the nineteenth century. Even an old Roman Author, amid the martial condition of a proud, vicious and heathenish empire, had the sagacity to see the paramount importance of agricultural education, and the honesty to utter his astonishment at its neglect.

"Nothing equals my surprise," says he, "when I consider that while those who desire to speak well select an orator whose eloquence may serve them as a model; and while those who are anxious to dance, or become good musicians, employ a dancing or a music master and in short that while every one looks for the best master, in order to make the best progress under his instructions, the most important science, has neither pupils nor teachers." "I have seen schools established for teaching rhetoric, geometry, music, dancing, etc., and yet I have never seen a master to teach agriculture, nor a pupil to learn it." And the same is lamentably true at this day, and in this boasted republican nation of agriculturists.

It may be said here, indeed we have often heard it said, that "Agriculture having done so long, and succeeded so well, without the aid of government, it can continue to do so." "It is doing well in these United States, it needs no such aid." True, in view of the disregard of Congress, to its claims, the people in self-reliance have been compelled to exert themselves, for the promotion of their country's prosperity. Hence Societies, State and County, have been established all over our land, demonstrating in every instance the great good which could be done through a systematic and liberal effort on the part of the States, and general government. The efforts of the people are greatly diminished by the want of sufficient means, and in the very nature of things must stop far short of consummating the desired end. Associated enterprise has been brought into requisition and has in some instances, as in the establishment of the Farm Department of the FARMERS' COLLEGE, accomplished what is praiseworthy; but such efforts will never be able to pursue, and it is unjust to require them to pursue such a system of investigation as shall fully and successfully develop the great science of rural economy. Investigators and experimentors must be paid for their time and labor. The

mechanic is protected in the inventions of his genius, and may become a millionaire by an improvement in the mode of heading a nail or pointing a pin, while the man who has discovered a principle in vegetable economy, which will increase fourfold the products of the soil, must forego all such immunities and be sneered at for his meanness if he make not his discoveries common property. A National Agricultural Society has been organized by the enterprise of a few individuals; but it is not as its name would imply, the object of Government patronage. To sustain its exhibitions, a tax of from ten to twenty thousand dollars has to be assessed upon the liberality of the people of the cities where it is proposed to hold its annual fairs. These instrumentalities are yielding essential service to this great pursuit, but not accomplishing at all what is claimed for it in view of its importance.

The opinion is almost universal, especially among professional men —the very class who should know better, if they would make a proper use of their reason—that nothing but bone and muscle are needed for the farmer, and he is hence left to grope his way in the dark, excepting, from such aid as he may receive through the numerous periodicals, on this subject, and the societies devoted to its interests. To accomplish for Agriculture what is claimed for it, and remedy the ills we deprecate, aid can alone come from science. If agricultural science is never taught in the United States, and never properly studied, how is it possible to experience any advance, without qualified teachers, without text books, or apparatus or statistics, or libraries, worthy the name; without popular sympathy how is a change to be effected for the better. It is greatly to be feared that so long as indefinite millions of acres of rich and virgin lands, over which no plow has ever passed, is accessible to all, but little attention will be had to the study of the proper means of making restitution to the soil of the elements abstracted; and that our railroads, canals, and steamboats now freighted with the products of our rich prairies will be most sedulously plied to enrich the present generation, and one or two succeeding ones, by creating a barren territory for all that may come after them.

The population in cities will continue to increase twice as fast as in the farming districts, simply because the treasures of the land will be transferred to commercial and manufacturing towns, there to be consumed in extravagance and luxury. It must be evident that

American Statesmanship must adopt a different system of political economy, and instead of ignoring, as now, the very existence of Agricultural science, and repudiating all its teachings and thereby impoverishing our soil at the rate three hundred millions of dollars a year, it must exercise a wiser foresight toward all that relates to the planting and farming of the soil, it must gather in its employ the best informed men to foster agricultural science ; it must enlist State legislatures in its behalf, requiring yearly statistical accounts of the number of acres under tillage, meadows in pasturage, and the products of each, and endeavor to so direct public instruction as to have due reference to the varied employments of men in after life; so that each class may be placed in a position which would enable it to develop a *literature of its own*, and acquire a mental as well moral discipline, in connection with tis own occupations, intersts and pursuits; in short, to adopt such a course in relation to this greatest of all pursuits as has been fully recognized and successfully acted upon, with regard to some four or five of the varied pursuits of men. The divines the lawyers, and physicians, the teachers, and the military men of our country, each and all have their specific schools, libraries, apparatus, and Universities for the application of all known forms of knowledge to their several professions in life. Hence the surprising intelligence and power which these classes now exhibit. Hence the eloquence and power of our pulpits and our courts, and senates, the efficiency of our medical and military schools. We claim then as a n ation of agriculturists the same advantages, the same liberally endowed institutions, with libraries, apparatus, teachers, and the application of the sciences taught as is enjoyed by the so called professional classes. We must repudiate and scout at all times, and in all places, the old monastic notions of ages gone, and now but too prevalent, that no Colleges, no literature, no science can be suited to the wants of farmers—to the industrial classes of society. That God has so made the world, that peculiar schools, peculiar applications of science and a peculiar resultant literature are found indispensable to the highest success in the art of killing men, in all States, while nothing of the kind can be based on the infinitely multifarious arts and processes of feeding, clothing and housing them.

Such notions, however prevalent, should be regarded as a shallow, pedantic assumption and be treated as wicked and blasphemous.

"Why has God linked the light, the dew drop, the clouds, the

sunshine and the storm, and concentrated the mighty powers of the earth, the ocean, and the sky, directed by an unknown and mysterious force, which rolls the spheres and arms the thunder-cloud—why are all these mystic and potent influences connected with the growing of every plant and the opening of every flower, the motive of every engine and every implement if he did not intend that each son and daughter of Adam's race should learn through the handicraft of their daily toil, to look through nature up to nature's GOD, trace his deep designs, and derive their mental and moral culture as well as their daily food, from that toil that is ever encircled and circumscribed on all hands by the unfathomed energies of his wisdom and his power."

Is there in agricultural science, the embodiment of all the sciences, no broad basis for the development of the noblest capacities of the mind heart and soul! How came such a heathenish and apostate idea ever to get abroad in the world? It must have been a Divine blunder that Adam was placed in a garden, instead of the Academy. Away with such monkish nonsense. Our American agriculture lays claim to the benefits derived and derivable from Universities, and Colleges, with their apparatus, libraries, teachers and text-books all bearing upon their pursuit for reasons already adduced and for many others that will arise to every reflecting mind.

The political declaimer may talk about the dignity of the farmer. There is and can be no such thing without intellectual culture, it is an idle parade of words intended but to deceive. It is mind educated, intelligent mind that must give dignity. 'T is this that has, and ever will, continue to govern men and angels. Ignorance is powerless and degrading, and where persisted in, is wicked.

As now about one in two hundred of our population is engaged in professional life, for the benefit of this meager few, over three-hundred colleges and universities are established; while there is not one deserving the name, with liberal endowments, designed for the liberal and practical education of the industrial classes. And it is hailed with jubilant triumph, that on the far off borders of Michigan one State legislature has dared to provide for this neglected class some six hundred acres of wild land, covered with timber, and donated some forty thousand dollars of swamp and mineral lands for its support. And we say well done, but there is even danger still that the next legislature will be so DEMOCRATIC as to recall the vote, and pronounce the whole unconstitutional. There

is yet no West Point to beam upon the horizon of their hope; nor as yet has our boundless national resources kept us—like the children of JAPHET emigrating from the ark—from the miserable degradation, and want, of older empires; but the resources themselves lie all undeveloped in some directions, wasted and misapplied in others, and rapidly vanishing away as centuries roll onward under the ignorance and unskillfulness that directs them in others.

Now what is imperiously demanded for the promotion of scientific agriculture is the endowment of a sufficient number of institutions, fully, liberally, to give support to scientific instructors. Let there be at first four located in different parts of our Union with sufficient ground connected therewith to subject to the test of experiment, the various seeds, cuttings, etc., obtained through the United States Patent Office, let these institutions be well supplied with apparatus, good well furnished laboratories, under the direction of men of science. Institutions thus manned, with all needed appliances, would do more for the advancement of this profound science in a decade of years, than all that would be accomplished for the next century under the present system, if system can be said to exist.

AN ETHNOLOGICAL INQUIRY CONCERNING THE ABORIGINAL RACES OF AMERICA.

NO. II.—UNITY OF THE PRESENT AMERICAN RACES—ARGUMENT FROM THEIR PERVADING PHYSICAL TYPE.

HAVING demonstrated in our first article, the unmistakable identity of the present native tribes of this continent with those ancient nations of remote antiquity—the builders of our Western mounds and fortifications, and the constructors of the ruined cities of Central America and Peru, together with the barbarous hunter-tribes of the North, by their uniform resemblance to each other in the type of their cranial conformations, as determined by an elaborate inductive comparison of nearly 400 skulls—we will now attempt to prove the unity of all the existing aboriginal tribes, and will also endeavor to establish the proposition: that this Occidental race of men, including the Mound-builders of the United States, the ancient Mexicans and Inca-Peruvians, are totally distinct from every race of the Old

World, both in their features, languages, customs, arts, religions, and in their native genius and national propensities.

Nor will this view of the subject contradict any theory respecting human origins, whether it be that which attributes it to a single pair, or to a plural creation of specific types. For in regard to the first idea, even though we should choose to consider the origin of this peculiar people, as having been derived from the different races of tbe Old World, who may have accidentally, and at widely different epochs, been drifted to these shores, it will at once be admitted, that the same physical causes that in the Old World are held capable of producing four totally distinct races from the loins of NOAH, would undoubtedly be entirely sufficient in the New World, where .the relations of climate and terrestrial life are presented in an inverted order, to give birth to a fifth race, by an amalgamation of the Mongal the Malay, the Scandinavian, and inhabitants of the Nile, that may have been fortuitously drifted to this continent ages ago.

And on the other hand, if we assume the different types of mankind to have been originally created in separate and distinct prototypes, or primordially organic pairs, or with AGASSIZ, maintain that men must have originated in nations, as the bees have originated in swarms, here we have the whole continent of America, with its mountain-ranges and table-lands—its valleys and low plans—its woods and prairies, exhibiting every variety of climate which could influence the nature of man, inhabited by one great family, that presents a prevailing type.

Small and peculiarly shaped crania—a cinnamon complexion—small feet and hands—black straight hair, and wild and savage dispositions, are their physical characteristics everywhere.

Living continually in the shadow of the virgin forests which overspread the land that they inhabit, they bear in their whole character the ineffaceable stamp of a peculiarly vegetative nature.

In their temperament lymphatic, cold, unsocial, and insensible, they are emphatically the children of the forest, somber and sad. Hunger, thirst, penance, and self-imposed torture is a part of their education, and this, together with the practice of many tribes of flattening the heads of their infants, sufficiently indicate the small irritability of nerve and muscular fiber that they possess, in common with the other races of the human family. J. P. E.

(TO BE CONTINUED.)

From "Talpa."

CHRONICLES OF A CLAY FARM.

CHAPTER IV.—A CONVERT,—AND A HERETIC.

(Continued from page 441.)

WE have read—and a little oftener than is pleasant—of victories gained in the field and lost in the cabinet. The civil war that has waged so long between the partisans of the deep and of the shallow drain presents an experience the converse of this. Long after peace had been proclaimed—upon paper—and most of the printed authorities had begun to pull together in favor of the deep drain—I say *most*, for even to this day a parting shot is now and then heard for the old system ;—long after the *shallow* advocates had written themselves round to the other side, the battle was still waging fiercely out-of-doors. Truly may the draining-tile be said to have "fought its way downward inch by inch." The benefit derived even from a drain eighteen or twenty inches deep *under the furrow* which was still retained, was so manifest and immediate, that the very improvement itself prevented further improvement. A man who had shallow-drained one field, and found that even this did good, imagined himself furnished with a practical argument against deep draining though he had *never tried it;* like those who condemn books they have never read, on the authority of opposite-thinking Reviewers which they have read.

This was precisely the sort of reasoning that lay fast and strong in the skull of my old *master*-drainer; for master I saw he was determined to be. The evidence of a hundred spirit-levels would have been no answer to "forty years' experience" in ditching. Of this I was quite sure: so we were at a dead pass. One or the other must give way "and be forever fallen." It was easy to wish him forty years' more experience—*elsewhere*—and "good morning;" but this would be only cutting the knot, and probably entailing another in succession. ("*Providence never interferes unless necessary.*") He was a good workman, and his authority over his men not a thing that it would be wise to shake, even had that been possible. A thought occurred to me, a very bold thought, all things considered. I knew

he hated the sight of *the Level*—that curious-looking thing on three sticks—worse than the old gentleman that walks upon two. What if I could reconcile these two great opposing authorities by one timely stroke—make him master-of-arts on the spot, before the eyes of all his men? Shorter and less earned degrees have been taken in the world. The opportunity was irresistible. I had it brought; adjusted it; and told him to look through it and give me his opinion of the Fall. If you ever saw a dog put his nose to a wasp's nest, you may form some idea of the mistrustful curiosity and hesitating aversion with which he brought his face into close contact with his arch-enemy.

A long, indescribable process ensued; a most determined effort to close the left eye with the right hand—then the right eye with the left hand—then a dead stillness, and a long, fumbling, breathless view of the world turned upside down, and his men standing on their heads for the first time, in spite of the forty years' experience to the contrary: and then—

"*Well I don't know but what you're right Sir:* the fall does want *a leetle easing at the bottom!*"

The success was complete. In half an hour every tile was uncovered. The men worked as men work who feel proud of their commander: he had arrived at the highest summit of his profession.—He returned to them with double authority and importance; and the drainage of my first field was soon accomplished; not as deeply, indeed—as we now call deeply; but deep enough, after the ridges had been twice cast, to allow EXALL and ANDREWS' subsoiler to follow the cross-plowing a year afterward, and break to pieces as obdurate a hearthpan as ever resisted the root of an oak.

"*After the ridges had been twice cast:*" how easy it looks in print! What a pretty little example-farm would England—and what would not Ireland be,—if the Press could *thus* cultivate and civilize!—if plows were printers' types and fields were paper—if bogs and fens and marshes could be drained like inkpots, and every drop that falls from Heaven—NO! NOT ONE DROP—too much or too little—were apportioned to its proper place and task. It falls *upon its proper place*, and *under that place lies its task*, would but man believe and act upon the hint, and do his part, his gloriously privileged part, in carrying out, for his own benefit, the purposes of perfect wisdom—the indications of an ever-suggestive handy-work.

"After the ridges had been twice cast!" Why, those seven words

that lie so smooth on paper, cost me three times seven months of single-handed fighting against the "*Experience*" of a whole neighborhood. No hawk in a rookery ever got better beleaguered. "One down t'other come on!" was the one perpetual motto of the tongue-task that awaited me fresh, and fresh, on every side, whichever way I turned. My own work-bailiff (*et Tu Brute!*) headed the attack within the camp—the traitor! while a neighboring clergyman led on the foe from without, evidently viewing the heresy in a serious light, and myself as a fit subject for an *auto da fe*. The conclusion of our last skirmish was too good to be lost to posterity. I entered it *verbatim* in my farm memoranda. Here it is:

"But tell me in earnest. Don't you mean to ridge up that field again?"

"No!"

"What, you mean to lay it FLAT?"

"Yes!"

"In the name of Goodness! Why?"

"Because THE NAME OF GOODNESS—*made it so!*"

If I had suddenly assumed some demoniacal form, and then, leaving a train of smoke and brimstone, vanished, with a clap of thunder, from before the eyes of my catechist, I do not think his face would have assumed a greater expression of resourceless and complete astonishment than followed this extraordinary announcement of the reason for a farming operation. Vainly did I attempt to explain in former conversations that when a field is effectually drained, *the furrows are underground*, three feet deep; and that one of the great objects of breaking the subsoil is to enable the water to go where it was *intended to go*, DOWNWARD; that every unevenness of the surface was a source of deviation, and therefore of unequal distribution, of that rich food that falls from Heaven—Oxygen and Hydrogen—commonly called WATER; that on the best land farmed in the best way, furrows are avoided as a nuisance and a loss, except as a mark for measure-work; and that the object of draining and subsoiling was—as the object of all Art is—to imitate Nature in her most perfect examples.

The paradox of yesterday is the truism of to-day. Gas-lamps light up towns, and Great-Westerns cross the Atlantic, though DAVY laughed at the one and LARDNER at the other. And the principle of the deep drain, which ten years ago the timid theorist dared not assert, for its wild and visionary seeming, is now the substance of

the "Report of a Committee," the last tautology of admitted facts that men endure, and having consigned to the charnel-house of the Blue Books, inscribe its epitaph in an Act of Parliament.

CHAPTER V.—COMBINATION AND COMMINUTION.

There are some incidental points of practice attendant upon the drainage of a field, which give very little uneasiness to a beginner, but which, like many of the other realities of life, gain force with further experience. A blessed thing in its way is the untamed boldness of youth. It gets done many things in this cautious, calculating old world, which, if not done then, would never be done at all, and which, whether useful for their striking goodness, or useful for their striking badness, afford equally profitable employment to that large and self-respected portion of the community whose business and pleasure lies in contentedly criticising the errors that others have made, in the charitable spirit of

> "the fiend that never spoke before,
> But cries 'I warned you,' when the deed is o'er."

One of the points referred to, first presented itself to the notice of the Chronicler, in this wise.

"A queer lot this, Sir!"

"Well it *is queer*," replied I, as the drainer threw out first a lump of blue clay, then a lump of red, then a horrible spadeful of white, then a dripping mass of yellow sand, then a kind of grey, gravely conglomerate, that had puzzled the very pickaxe whose delicate style of dissection had been brought to bear upon it, then a few spadefuls of beautifully-veined red marl, and then broke into a carboniferous-looking bed of black peat—and then—but let the old drainer christen it, for my heterology is exhausted.

"A QUEER LOT, this, Sir! What shall I do with it?"

I stood for a moment melo-dramatically silent, working up my courage to a great effort. Out it came at last.

"*Let it be spread over the land!*"

He was just raising his face to look up in mine. I knew what was coming; I caught one side of his mouth screwing into an agony of contortion, as the idea loomed painfully, by degrees, upon his perceptions. I waited for no more, but turned quietly round, trying to stifle a fit of inward laughter—not at my own words, but at the effect I knew they were producing—and walked away. I turned once only, and saw him leaning on his spade, and looking after me.

I can give you his soliloquy, for it was written upon his attitude, like the lettering of a picture.

"Well!—If *that* don't beat every thing!"

A blessed thing, in its way I say again, is the untamed boldness of youth. There was not a full-grown "practical farmer" within a ten-mile circuit of the spot where the old drainer stood on that day, wrapt in severe amazement, who would not have thought it as much as his fair fame was worth to give that order. Nothing but the inconceivable daring of pure, unmitigated Theory would have ventured its character upon such a throw. Now for the explanation.

Upon all wet, thin, cold, clay soils, the wisdom of antiquity has long established that you are only to plow three or four inches deep; that you are to ridge up your lands into a certain round-packed shape, from which the rain may run off, as it would from an umbrella, or the roof of a house; that you are never to cross-plow, or otherwise disturb this consecrated form into which the earth's surface has been once-for-all molded, but to keep scratching it, up and down, shallow enough to insure a seed-time by having a dry surface two inches deep, leaving the furrow, and about a yard on each side of it, as the perpetual channel or bed for water or ice in the winter, and baked sterility in the summer; that if any body dares to mention to you any thing about that mysterious abomination called the subsoil, you are to screw up your mouth, shake your head, and say,

"It won't do to bring up *that nasty stuff!*"

"But don't Gardeners do it sometimes?" I one day ventured to ask, with childlike simplicity, in reply to the established doctrine.

"That's a different thing: gardeners are n't 'practical farmers.'"

"But don't the roots of plants grow *downward* in a field, as well as in a garden?"

I don't know how it was, but that provoking question always brought the conversation to an abrupt close. I never could get beyond it. It stuck in my own throat and every body's else, like MACBETH'S Amen. Left alone at last to my own ignorance, I droped deeper and deeper, day after day into a state of confirmed theory, and was given up by all the agricultural faculty. I got strange notions into my head, that, as two negatives make an affirmative, perhaps two bad soils might make one good one, and three bad soils, a better still, and four bad ones the best of all! and when I saw the

old drainer throwing out those lumps of many-colored clay, and sand, and gravel, and peat, it was really too much for me. The monomania was irresistible; and the old fellow must have known it; for at the very moment when the paraoxysm was at its hight—just when the extravagant thought was flashing across me that though every body declared *nem. con.* that it was bad, *some one* had pronounced it *good*—just at that very moment of weak hallucination, the old Lucifer, smacking his lips in an odd way of his own, looked up temptingly in my face, with his question, "A queer lot, Sir!—What shall I do with it?"

Blue and red, yellow and grey, white and black, stiff and loose, gritty and waxy, cohesive and repellent, soft and hard—there it lay before my eyes, my precious subsoil in all its Protean variety of color, texture, and consistency; there lay the rascally substratum that had pulled down strong men, one after another, who had tried to grow crops over it, exposed at last and brought to daylight like an unearthed fox; there it lay, dripping away its long pent-up moisture down the narrow channel that led to the newly-opened out-let, through that same long meadow afore-time celebrated in this Chronicle; reminding one of a fallen foe bleeding out life and mischief at last and forever. The impulse of pent-up theory was irresistible. "Let it be spread over the land!"

And so it was. And a very curious-looking field it made for the livelong winter that ensued. Wise men came from all the quarters of the compass to look at it. Some of their remarks and questions were very flattering. "Where had I purchased my *Winter top-dressing?* as they should like to buy some at the same shop, cost what it might." "What winter crop was I growing so carefully under the variegated carpet?" To all which I answered with becoming gravity, and modesty of my own merit. Some of the remarks being of a more mysterious character, I entered in my farm journal for future explanation and experience; such for instance as that of an old gentleman who shutting one eye, (I suppose it was a habit,) told me with great blandness of manner that I "*put my foot in it.*" (What could he mean?) Another was so full of general good wishes that he "wished I might get it" more than once; which I thought all the more good-natured as he did not even stay to particularize what crop he alluded to as wishing me to get, or how much per acre. But of course I civilly "wished him the same," gently shutting one eye as

I saw it was the fashion, and had such a pleasing effect; at which, being an old friend, he performed the ceremony of inserting his second finger between the fourth and fifth rib of my left side, and informed me, with a smile, that "he saw I understood chaff," to which, innocently replying in the affirmative, I added, for reason, that I had a great demand for it of late among my friends, and found it an useful commodity in agriculture. Such are the dark and recondite passages presented by my journal of that winter, which I offer for the information and guidance of all those who may purpose trying novel experiments unsanctioned by the established practice of their respective neighborhoods; merely observing, that there are some things besides the soil, on this earth, which require a little tempering, and pay well to a man's peace of mind for being done quietly and neatly, without haste or heat—yet smartly withal.

Spring came at last: beautiful Spring! that fills the old heart with youth, and softens down to a more genial and hopeful tone the frosts and snows that reign *within*, as without, through dreary winter. Certain reports respecting the field which had been drained, and so curiously "top-dressed," had from time to time altered the current of opinion that hitherto run so strongly all one way. The underwagoner had told somebody in strict confidence that the snow had disappeared on that field much sooner than from any other.—This had been repeated in equal confidence from mouth to mouth, with the addition that all the clay had "kicked down to ashes;" but what topped every thing was that before even bean-sowing had begun, the "motley close" was reported "as dry as a bone."

The Harrow is certainly not the most ingenious or perfect of agricultural implements; but never was a more surprising feat performed by any, than was witnessed one fine morning early in March, when it was ordered over the field afore mentioned! Down went the clay, sand, peat, and every thing else,—

"Black spirits and white,
Blue spirits and grey,
Mingle, mingle, mingle,
Ye that mingle may!"

And "mingle" in truth they did, into as free healthy-looking a soil, as fresh and as mellow as if it had never lain underground or been out of the sunshine. With every turn of the horses, better and better it looked and worked. An increasing elasticity of movement seemed to pervade men, horses, harrows, soil, and even the very atmosphere of the field. Before the work was half done, Theory and the Chronicle were at a premium.

THE MILDEW AND THE ROT IN THE GRAPE.

The partial failure of the grape crop in this vicinity for the last few years, has created considerable alarm in the minds of some persons who have invested large capital in the culture of the vine, for the production of wine. Many are beginning to be distrustful that it is not going to prove a remunerative crop. So great were the apprehensions entertained, that the subject was brought up before the Horticultural Society of Cincinnati, and a committee appointed to investigate the causes of failure, and if possible, to point out remedies, and to report upon the feasibility of the culture of the grape in this vicininty as a remunerative investment of capital and labor.

As a member of that committee, who have not yet made a final report, I have taken great pains to investigate the subject during the past unfavorable season, and have come to the knowledge of some facts which will serve to dispel the mystery which has heretofore involved the two most destructive diseases to which the grape is liable, the *mildew* and the *rot.*

Like all other productions of Agriculture, the grape is liable to many casualties, some of which being dependent upon the season, as untimely frosts, hail storms, etc., are without remedy, while for others also dependent upon the character of the season, as these above named, we may yet hope for a remedy.

The mildew makes its appearance under peculiar conditions of the atmosphere sometimes very suddenly in the form of a white mealy powder, covering the young and tender berries, and frequently the growing short leaves and stems of the grape. It has been demonstrated by a careful microscopic examinator, that these consist of a white organized fungus growing upon the yet unhardened surface of the Epidermal cells forming the cuticle, and in some undiscovered way destroying the organization of the parts to which it is attached, as the grapes in all cases, cease to grow, turn black and fall off. In no instance have we seen a single berry come to perfection where this fungus was attached in any considerable quantity. This fungus when viewed through a lens, the focus of which is a quarter of an inch, appears in the form of a most beautiful premature forest growing upon the surface of the grapes, each tree being separate and distinct, with trunk and branches similar in shape to

the white pine of our forest. The branches when full grown are numerously subdivided and beset with myriads of mycroscopic spores, or germs, which are readily detached by the wind and fill the air with invisible but reproductive elements.

The malady well known among cultivators as the black rot, and which has proved even more destructive to the grape than the mildew, makes its appearance at a later period, and in a more insidious manner, in the form of a black speck on the surface of the berry which sometimes is quite limited, but oftener spreading and soon involving the whole berry in its destructive grasp. This disease has always succeeded the mildew, but has more frequently made its appearance in our vineyards, without that sure precurser, rapidly spreading, and often destroying almost the entire crop, especially in unfavorable locations. This appears to be produced by the same, or another species of fungus at a later period, after the cuticle has become so much thickened and condensed as not to allow the ready attachment of the spores, and growth of the fungus upon the surface, but may here be seen in the form of a white thread-like mycelium in the interior of the berry, interwoven among the cells, which in consequence soon become disorganized and broken down, first becoming brown, then black, and either fall off or dry up and remain attached to the stems.

The presence of this internal fungus is generally indicated by a bluish tint on the surface of the grape, the destruction of which is sure to follow; in many cases this fungus may be seen filling up and growing out of the stomates, or breathing pores of the stems, and pedicels of the fruit, and if the pedicel be divided longitudinally, with a sharp knife, these white thread-like fibers may be seen under the microscope, running among the cells quite into the berry itself, and its effects are equally fatal whether in the stem or the fruit.

The source from whence the spores or germs, of these fungi originate is at present involved in obscurity, and may long remain a subject of conjecture and speculation. They are probably floating in the atmosphere like the germs of the fermenting fungus which when admitted in contact with the transparent filtered juice of ripe grapes has been known to commence its growth in one hour after being pressed, rendering the fluid cloudy and thick, and giving off bubbles of gas, and in three hours to form a considerable layer of a greyish yellow substance on the surface called yeast. This substance when

examined under the microscope is found to consist of countless little plants, and a few hours suffice for the production—according to the quantity of fluid, and degree of temperature—of myriads of them. It has been calculated that a single cubic inch of such yeast is composed of 1,152,000,000, eleven hundred and fifty two millions of plants (Schleiden).

The various conjectural causes that have heretofore been assigned for the production of these maladies in the grape—such as a want of proper elements in the soil—accumulation of too much moisture about the roots—too close planting—too deep planting and removing the surface roots—too much wood and foliage upon the vine—cold changes of atmosphere checking the circulation of sap—poisonous gases exhaling from the ground, etc., etc.,—has led to much empyricism in the vine culture, and caused many expensive and useless experiments to remove causes that do not exist.

From observations made during an experience in the grape culture for the last fifteen years, especially the season just past, we had arrived at the firm conviction that the particular modes of preparing the grounds, planting or training, would secure the crop from the maladies above named, as we have often seen the disease in question in an aggravated form, in some seasons under all the various modes of culture to which the vine has been subjected. This conclusion has been strengthened by a recent visit to the numerous Vineyards in Missouri in the neighborhood of Herman. The vineyards at that place have been established by an intelligent and enterprizing class of Germans, on a very favorable soil and generally in a very thorough manner, the ground well trenched, and the vines in almost every instance planted six feet apart each way and trained on trellesses, and the ground thoroughly cultivated. For the three years previous to the present, the crop there has proved almost an entire failure in consequence of mildew and rot, except in certain favorable localities, as is the case in this vicinity. The present season with the same uniform treatment, they are favored with the most abundant and perfect crop of grapes that I have ever witnessed—no mildew, no rot, nor any apparent disease whatever.

The remote cause of mildew and rot can not be traced to any particular mode of planting or training, but can always be traced to that peculiar warm and damp state of the atmosphere prevailing at a time when the vine has just shed its blossoms and the grapes have

been formed, its tissues being rendered soft and succulent, under such circumstances favor the attachment and rapid development of the spores or germs of the fungi which must be regarded as the immediate cause of the destruction of the grape crop in this country. The idea that has been suggested, that fungi never grow upon healthy vegetable tissues, and that the grape has first become diseased before it makes its appearance, is certainly a mistake, for the grapes attacked by the mildew and rot are always those of the most healthy and vigorous growth In certain localities exposed to a dry and free circulation of air, the grape often escapes in seasons of the most unfavorable character. The mildew which always makes its appearance during warm rainy and foggy weather is often arrested by a single dry and sunny day. The rot also is always checked by clear and dry weather, but not always entirely arrested as it sometimes goes on gradually through the clusters till the period of ripening.

Having thus pointed out what is believed to be the true causes and character of those maladies which have proved most destructive to the grape crop, there is much reason to hope that some remedy will yet be discovered to prevent if not entirely arrest its ravages. Although the elements are not under our control, and we can not stay the rains and the fogs, yet it is possible we may prevent the growth of fungi upon our grapes, upon the same principles that the fermenting fungi may be prevented from growing in a cask of wine by the use of sulphur and its compounds.

It is well known that sulphur and the alkalies are obnoxious to most cryptogamous plants, and especially the fungi. In graperies and green-houses the use of sulphur has been found to check the ravages of mildew, and it is reported that in France the present season immense quantities of it have been distributed in the departments, and scattered among the vines, with what success has not been ascertained, although it is said, the grape crop is much better than in several previous years. A single instance has been reported in this vicinity, that of WM. ORANGE, Esq., containing some two acres, wherein a mixture of Sulphur and Lime, in boiling water, and properly diluted had been syringed upon the vines and fruit after the appearance of mildew, and it was believed had almost entirely preserved it from the rot, which destroyed other vineyards in the immediate neighborhood, the present season. Mr. HODGE also reports having used dry sulphur, by dusting it upon the vines and fruit,

also a mixture of sulphur and dry quicklime, in the same manner—and again by sprinkling dry sulphur upon the ground under the vines after the appearance of mildew and rot, all with marked benefit in arresting the progress of disease.

It is to be hoped that next year numerous experiments will be tried, by the free use of these substances in various forms, and applied to the vines and fruit immediately after the fall of the blossom, and before the mildew makes its appearance—and by coating the berries with a layer of some of these preparations, it is very probable the spores or germs of fungous plants will be prevented from growing upon them. A repetition of the remedy every eight or ten days, until the seeds of the grape become somewhat hardened, would add to the security of the crop. This may all be done by a moderate outlay of labor and expense, which would be amply remunerated should it prove successful in its results.

In regard to the practicability of pursuing the grape culture, as a remunerative crop, in view of the casualties to which it is liable in this climate, it is evident that like all other agricultural pursuits, depending upon so many contingences that it is difficult to arrive at any very definite estimate as to the profits of the business.

From the knowledge derived from the culture of a vineyard for the last fifteen years, together with the statements of a large number of cultivators who have been longest engaged in the business, we do not hesitate the assertion that it has proved a remunerative crop in this vicinity, notwithstanding the casualties to which it is liable—varying like all other crops, according to the skill with which it is conducted and the economy practiced. Most of those who have engaged in the business and conducted it under their personal supervision, have made very favorable reports as to the profits—stating that a medium crop once in two years and a full crop once in three years, will pay better than the same expenditure bestowed upon any other agricultural product. It is believed however, that considerable improvement might be made in the profits of the business by planting and cultivating several kinds of crop instead of all catawba which is now almost exclusively cultivated. The Schuylkill, or Cape, as it is erroneously called—the Venango, or Miners' Tennessee, and the Isabella are all of a more hardy constitution than the Catawba, and each of them make a good wine, and this season are loaded with a good crop, where the Catawba has almost entirely failed. Some years the reverse

will be the case, and by cultivating four or five most hardy varieties in the vineyard, a remunerative crop would be insured nearly every year.

Persons of small capital who have to depend upon the products of their labor for the annual support of their families, would run much hazard by engaging exclusively in the business. But to those who have capital enough to bear the loss of an occasional crop, and are not obliged to sell the wine immediately, and who manage the business with ordinary providence and skill, we believe it will afford a safe and profitable investment of capital and labor. L. MOSHER.

Latonia Springs, October 15*th*, 1857.

ADVANTAGES OF STUDYING LATIN AND GREEK.

IT may not be known generally, that the studies embraced in our regular Collegiate Institutions are as thoroughly attended to at FARMERS' COLLEGE as elsewhere. Indeed, by the course here pursued, these studies may be more fully mastered than where the sciences are included, and there is but a single course pursued or which amounts to the same thing, where importance is attached chiefly to the linguistic course, and the honors of the College conferred on no others than those who have studied so many pages of Latin, and Greek, and boxed the compass of science, mathematics, mental and moral philosophy, Belles Letters, etc, in the short space of four years. As to the importance of studying the Latin and Greek, we leave our professor in that department to speak for himself.—ED.

When the dying father revealed to his four sons the startling secret, that here and there upon his large farm, he had buried golden treasures; he most wisely bequeathed to those sons a two fold blessing personal vigor, and abounding crops. The field of classic literature invites the student to just such a two-fold reward, a vigorous mind, and treasures of truth. In the first place, look at the personal vigor of intellect that must attend the proper study of these languages.— Witness the operation, which, to do the work properly, must occupy from one to two hours per day, for two years. It may profitably be kept up longer, but by no means for less than two years. I say,

witness the daily operation. It is thus. Before the student lies a good Lexicon, and his author, CICERO, VIRGIL, etc., or DEMOSTHENES, HOWARD, HERODOTUS—one at a time of course. Every word of his author is first to be carried, by the hands of memory, to his vocabulary, the quick eye of the mind must discover the resemblance between the word in question and the word to give the information. Memory now, like the bee with its honey, must carry back the information, or meaning of the word, and fit it to its right place in the sentence to be unfolded. This operation of memory is to be repeated perhaps twenty times on a single sentence. Each sentence is a problem. Suppose the daily labor be equivalent to fifty sentences, averaging twenty words each. Here is a task for the memory alone upon one thousand distinct operations. Now if practice according to the laws of GOD gives facility and strength, I ask you to balance the account for two years, of such discipline to memory.

Again look at the training of *perception.* By perception I mean that faculty of the mind that says I SEE IT. That which made ARCHIMEDES cry out Eureka. Perception, when strong and clear, produces conception. The former sees things tangible to the eye, the latter sees the corresponding things tangible to the mind alone.—They are the same faculty working now on the outward, and again on the inward truth. For example ; perception sees into the whole machinery of a steam engine. Conception goes into the dark, or anywhere, and reproduces the steam engine in the mind. Now observe how this faculty is harnessed to the work of improvement in studying the classics.

First it is set to tracing likenesses. The classics have this peculiarity above all other lánguages, a boundless field of likenesses, all of which are unlike in some small particular, which keeps the perception on a sharp look out like the sentry on the watch tower.

Every noun has about ten or twelve small, yet clear and well defined, different terminations on one general likeness. Every verb has some fifty varieties of terminations on one general form. These are the nice little " hide and seek" places so well fitted to keep perception wide awake and on the " *Quie vive.*" Then again perception must watch the shape of the new meaning, and see its fitness to the place to be filled. Thus, as in the case of memory, it has a thousand operations to perform in its daily task.

But again, look at the high demand on the cultivation of good

taste, and correct judgment. Every word in Latin or Greek has from two to forty varieties of meaning, averaging about ten different shades of thought. A beautiful sentence well translated, gives constant exercise for elegance and simplicity of address, and conversation. The conclusion of this part of the argument is this. Give a student a quick perception, a ready memory and refined taste, and you give him all the elements of success in practical life as a useful man.

But the last argument I now offer is still stronger in favor of classical studies. And here I must be permitted to say that I by no means depreciate any other branch of study, when rightly pursued—they are all divinely suited to unfold the whole man for his Godlike employment. I am merely setting forth these facts for the benefit of those who depreciate the classics as dead languages. To them I would state the last argument as follows. Words are the wings of thought, and the faithful study of the classics furnish the wings. This will appear from the fact that this daily handling of such a large fund of words must give power to use them, when needed to express thought. We *think* by the help of suitable words, as birds move on full fledged wings. Familiarity with such a vast resource of words, must, by the laws of association, be the result of this study.

Now 40,000 words of the English language are derived from the Latin and about 4000 from the Greek.

And are these your *dead-languages*? Is CINCINNATUS dead? Is the old patriot farmer dead? Is DEMOSTHENES dead? Can you kill the immortal struggle of virtue; can you extinguish the fires of their manly thought and language? You can scarcely speak an English sentence without breathing forth some classic inspiration. There is a spirit and a power in classic language that can never die, and fortunate is the man who has learned to draw waters from this fountain.

ARCHITECTURE—OR THE SCIENCE OF BUILDING.

WE present, as the frontispiece of the present number, our own residence, not as a model of taste, or of the most appropriate style of building, but rather as furnishing an occasion for a few remarks on the subject of Rural Architecture, and its importance in an economi-

cal as well as ornamental point of view. While no claim is laid to any superiority or excellence in the structure presented, over many similar ones in the neighorhood of our city, yet it presents at once to the practiced eye all the proportions of Grecian architecture according to the Corinthian order, the capital of the column excepted, which exhibits a slight deviation in form, but in fillets, bands, flutes, length and breadth of column, it is in conformity to the strictest rules of the order, which may be seen by a single glance at the engraving.

The grounds and surroundings, though in some respects neat, are subject to criticism, rearrangement has here been postponed on account of the numerous choice fruit trees which were established previous to building, which economy has spared until others could be reared in the back ground to supply their place. In this respect we are compelled to adopt the preceptive and say follow our directions and not our example. And our precept here is adopt by all means the natural system of grouping, and not officering in straight rows as hitherto extensively, we may say universally, practiced.—Leaving our engraving we would offer a few remarks on architecture, and especially on

RURAL ARCHITECTURE.

Architecture, or the science of building, undoubtedly occupied the attention of men as soon as that of cultivating the lands. Hence THEODORETUS calls the latter, that is, *Agriculture*, the oldest sister of architecture. The excessive heats of summer, the severity of winter, inconvenience of rain, and the violence of wind, soon instructed mankind to seek for shelter, and provide themselves retreats, to defend them against the inclemencies of the weather. The first essays were doubtless rude in the extreme, burlesqueing every thing like architectural taste in their construction as do now many of those ruder attempts that greet us, not confined to the backwoods which might be denominated simple enclosures for the wives and children of the occupants, not even consulting utility, much less neatness or taste in their external appearance. Long, long before this noble art reached anything like perfection ; we find that neither to Asia nor Egypt are we indebted to that degree of it which it subsequently attained. The designs, which we have of the ruins of Persepolis, prove that the Kings of Persia, of whose opulence ancient history says so much, had but indifferent artists in their employ. However

this may be, it appears from the very names of the three principal orders of architecture, that the invention if not perfection of them is to be ascribed to Greece, and that it was she who prescribed the rules and supplied the models of them. As much may be said with regard to all the other arts, and almost all the sciences. It is a great misfortune that there is nothing of this science by the Greeks now extant. We must learn its principles not from their books but the structures of their ancient masters still subsisting, whose beauty, universally acknowledged, has for almost two thousand years been the admiration of all good judges. These monuments of their skill, and taste, have abundantly proved themselves not the fruits of capricious fashion and fancy, but have their origin in the principles of a profound philosophy. The occasion there was for erecting different sorts of buildings, made artists also establish different proportions, in order to have such as were proper for every kind of structure, according to the magnitude, strength, splendor and beauty they wished to give them. From these different proportions, were composed different orders. Order as a term of architecture signifies the different ornaments, measures and proportions of the columns and pilasters, which support or adorn great buildings. The Grecian orders were three in number, the Doric, Ionic, and Corinthian.—These may with propriety be called the perfection of the orders, as they embrace all that is fine, as well as all that is necessary in the art; there being only three ways of building, the solid, the middle and the delicate, which are all perfectly executed in these three orders. The Latins added two others, the Tuscan and Composite orders.—That which is remote from the ancient proportions, and is loaded with chimerical ornaments, is called Gothic, and was brought by the Goths from the north. There are two species of Gothic architecture; the one ancient the other modern. The edifices built in the ancient Gothic manner were massy, heavy and gross; the modern more delicate easy and light. All the ancient Cathedrals and most of the modern are Gothic in their Architecture. These various orders form the basis of all that is truly magnificent, classical and chaste in building at the present time, and so far as there is a departure from the proportions followed in these orders, it is an offense to the eye of reason and taste, for these very proportions are all founded in the natural beauty and fitness of things.

To us there is nothing more attractive than models of style in architecture. What a relief after viewing an unsightly structure,

with a massive or a delicate column, all out of proportion, to place the eye upon the column with base shaft and capital symmetrically and proportionally constructed; and correct taste should be cultivated here it would seem with more propriety even than in the fashion of our garments and other personal ornaments, to which latter, even savages are not insensible. Extravagance and great expenditure in construction is by no means demanded, but is always to be discouraged in rural architecture. Our theory on this point, is, to build your house, whether expensively or cheaply, upon the principles of correct taste. It costs no more to make a neat shoe for the foot in these days, nor so much as in the reign of WILLIAM RUFUS, or in the time of CHAUCER, when they were made like a ram's-horn and the points were so long as to be tied up to the knee.

Good taste, economy, and adaptation to their legitimate purposes are all in harmony in rural architecture; and how much does the display of a plain neat architecture add to rural scenery, how does it enhance the rational pleasures of rural life, and must, wherever it is exhibited be to the observer an evidence of agricultural prosperity, and growing refinement.

Human pleasure, save what is falsely so salled, coming from the gratification of the low and groveling appetites and passions, is the result of harmony between nature and the well cultivated intellect, or of the commingling of social affinities of kindred mold, or of the mental tendencies of the soul in their higher efforts to assimilate with the undefiled spirit world. The first of these sources of human pleasure embraces all matters of taste, not the least of which is the rich display of artistic skill in the economy of civilized society, architecture being perhaps one of the most prominent. Did the landscape and lawns of our rural districts wear the habiliments of taste and neatness which proper education and enlightenment would most surely impart, we should soon think we had waked up in a new world. Buildings properly constructed, fences neatly but economically made, trees grouped in natural order around and in front of the house, the grounds in rear graced with garden and orchard, of well selected, well planted fruit trees, these would confer inconceivable luster, beauty, and attractiveness to the country, and impart a dignity to our yeomanry to which as now they must ever be strangers. Rural occupations rural pleasures would then be coveted and sought by sage and philosopher, and our young men would not forever associate with them sweat and toil, and make it their chief effort and study in all their future plans to eschew them as a dire calamity.

CORRESPONDENCE OF THE CINCINNATUS.

FREEDOM, Ill., Oct. 20th, 1857.

FRIEND CARY :—

DEAR SIR :—As this is the first time I have troubled you with a letter since I visited your Institution and beautiful grounds, Laboratory, Cabinets, etc., and having been so agreeably entertained, and wishing to learn of your success and that of the College and experimental farm, I know you will pardon this liberty. We have had a remarkably fine season for business and the maturing of the corn and other fall crops having had but two light frosts as yet, viz, on the nights of the 28th and 29th of Sept., hardly killing the sweet potatoes and other tender vines. Our crops are all remarkably fine, except potatoes, some of which are injured in this locality by a black rot. The yield is great, prices low, and I am at a loss to determine whether the great depression is occasioned by the large erops or the pressure in the money market, perhaps both, although our locality is not affected as seriously by the bank suspension as such as are depending upon the manufacturing interests. And although it is harder to sell two bushels of wheat for a dollar, than one requiring more labor, yet having the wheat, the farmer can raise the dollar, while the manufacturer and the laborer finds himself without the dollar or anything to secure it; the wheels must cease to move where there is no money. The farmer, if anybody, gets a portion of that which is in circulation, for the people must have his products or starve. And it is fortunate for the country that the hard times commenced before the produce reached the hands of the merchants, at former high prices, for in such cases the merchants being bankrupt, the farmer would be without produce or money. Now the farmer has his produce and though at a greatly reduced price he can stand it.

The White Pirk Wheat that I brought from your place is growing finely and looks remarkably well; and I must say that there is more vitality in it than in any kind I ever saw. The Chinese Sugar Cane is proven beyond a doubt to be well adapted to our climate and soil, and further, that there is an abundance of sacharine matter in it. Much of the cane in our locality is full fourteen feet in hight, with ordinary attention; and on my place, planted on the 20th of May,

and cultivated as ordinary field crops, is twelve feet high on an average, and well matured. The only question which arises; can the manufacture of it into molasses and sugar be made profitable? Will not the reduction of it to these products cost too much, especially where wood and coal is as scarce as on our prairie lands? We have not with present rude fixtures been able to grain it. I visited one of these rude mills which consisted of two wooden rollers, which would yield to the resistance of the cane, propelled by a single horse, and yet from thirty-five to forty canes would fill a common bucket; and from appearance, it left more than one half of the sacharine matter in the cane. One man, operating with one of these rude fixtures, thinks the molasses can be manufactured for fifteen cents per gallon, including cost of producing cane. If this be half true it will be a great benefit to the country. I hope and believe the difficulty of graining will yet be overcome in this inventive and constantly progressing age; and I think out of this very product will yet spring up an important business, and the man who succeeds by a cheap and easy process to make sugar will soon realize a fortune.

I exhibited a sample of your Pirk Wheat at our fair, also a specimen of the barley grown on your experimental farm, and they attracted great attention—none as good were exhibited.

Go on and you will yet realize your wishes, in your experimental department, it is just what our country needs, and the State might well afford to lend you their aid.

PRICES OF PRODUCE IN MARKET.

Flour $2.50 per hundred pounds—winter wheat none in market—Spring wheat, 62 cents per bushel—Shell corn (old) 45 cents sixty pounds—Ear corn, 43 cents seventy-five pounds—Potatoes, 25 cents per bushel—Oats, 26 cents per bushel—Apples, $1.25 per bushel—Butter, 20 cents per pound—Eggs, 10 cents per dozen—Hides, (dry) 7 cents per pound, green, 3 cents. Yours truly,

JOHN H. HOSFORD.

The following from the pen of the Hon. JOHN BELTON O'NEAL, Springfield, near Newburg, South Carolina, was, on reception, read with interest, and we give it to our subscribers.—ED.

F. G. CARY, President of Agricultural Department FARMERS' COLLEGE.

MY DEAR SIR.—Reading the article entitled "Fungi," in the CINCINNATUS, I thought my experience in the prevention of smut,

or Euredo Fœtida, might be of service. I have been a wheat grower for thirty-six years. About thirty-five years ago, a friend, JNO S. CARWELL, Esq., of Newberry, gave to me the following recipe:

"For every five bushels of wheat take one pound blue stone, dissolve it in as much water as will fully cover the wheat, place it in the liquid in the evening, let it remain during the night, take it out, and after draining a short time, sow."

Enough ought to be thus prepared each evening for the next day's sowing. I have tried this method for thirty-five years, and have never found smut, except one year in a very small parcel, then I had neglected the use of Blue Stone. It has not only prevented *smut* but it has also *destroyed cockle.* I have for several years sowed one hundred bushels of wheat each season, and hence my experience may be implicitly relied upon.

This little matter is given to your very excellent work, in the hope that it may benefit your readers in the great grain growing State of Ohio, where I have many friends and relatives.

Yours truly, JOHN BELTON O'NEAL.

CLOSE BREEDING.

THERE has long been a controversy among men on the subject of close breeding, some contending that it is very injurious, others that it is not seriously objectionable. By close breeding is meant, breeding by animals of near affinity of blood. It is contended by the objectors to close breeding, that fowls, sheep, hogs, and cattle that are bred for a long series of years in the same flocks, without the addition of any alien blood from other flocks or breeds, surely degenerate and become less useful. And this is given to account for the unserviceable fowls, the gaunt hogs, the weakly sheep and scrawny cattle that are so frequently found on old farms, and among old-style farmers. Those who see no objections to close breeding cite many examples of it to sustain their views, such as Flying Childers, a horse of unrivaled beauty and speed, known to have been closely bred; the Darby Game fowl, bred at Knowley Park for several hundred years without change from the blood of the original stock; the pair of wild geese brought by Col. JAQUES, of Sommerville, Miss.,

from Canada, in 1818, whose stock at this time, bred in a direct line from the original pair without the addition of any strain of new blood, is not in the least degenerated. But notwithstanding these isolated cases of the seeming safety of close breeding, we must give our testimony strongly against it. We can not but feel that close breeding, among human creatures or animals, is generally attended with bad effects. It is true, cousins may sometimes marry with safety to their offspring, but it is very common that bad results are known to follow. We have seen nor read of no great man or woman the offspring of cousins. And we believe that the children of cousins are generally inferior to their parents. The same physiological laws are in action in both human and animal creatures. It is a law we believe of human physiology that similarity of temperament is unfavorable to the offspring, while dissimilarity of temperament is favorable. Now it is a general rule that similarity of temperament obtains in families. This will be especially the case if families should breed in-and-in for several generations. Even in this view of the subject it is best often to seek favorable crosses, in breeding animals.

It is well known that the barn-yard fowls on many farms are very unserviceable. It is known, too, that this is not for the want of good fair, shelter, etc. It is known also that in many instances these fowls have been bred-in for many years without a single fowl from any other flock being added. The inference is very plausible that close breeding has affected them unfavorably.

We know a woman whose hens have for several years been very serviceable. She is the wife of an intelligent and successful farmer, and she laughs at the mania for foreign fowls. She thinks she can show as large eggs and as many from a hen—as much profit with as little expenditure—as any body. Her plan has been for many years to breed from her best hens, to set only the largest eggs. If she sees a fowl in any neighbor's yard that is very fine, she buys it or swaps for it; if she sees a very large egg elsewhere, she secures it if possible; thus constantly bringing new strains of promising blood.—Her fowls are large, healthy and thrifty. Being well cared for every way, they are very productive and serviceable.

We believe this is the best plan to secure useful fowls. The same general principles will apply to raising all kinds of stock.—*Valley Farmer.*

REVISED EDITION OF DOWNING'S FRUITS AND FRUIT-TREES OF AMERICA.

A VERY beautiful and improved edition of this work has been issued, a copy of which has been placed upon our table by ROBERT CLARKE, Bookseller, No. 46 West Sixth Street, Cincinnati.

We regard the former edition of this work as one of the best of the kind that has yet emanated from the American press. The new edition we find much inproved, introducing many new varieties, and from experience had in relation to many of them speaking more positively of their excellencies or defects. This manual should be found in the hands of every fruit-grower.

Pomology in the West, especially amidst its abounding seedlings and the constant introduction of varieties of foreign fruits but imperfectly known amongst us, is a most embarrassing study, beset with difficulties rendering it literally impossible to furnish a work in all respects unexceptionable. And this however, complete, will be found inadequate. This work has done as much perhaps as any one to settle the chaos which has existed in our nomenclature in relation to many varieties of our pears and other fruits.

On examination it will be found that the White Doyenne has in our country thirty different names. Our author proceeds in such cases thus: He gives first the standard name in capitals, followed by the authorities—that is, the names of authors who have previously given an account of it by this title. Below this are placed in smaller type, the various synonymous or local names, by which the fruit is known in various countries, or parts of the country. This is valuable in settling numerous perplexing difficulties. Many of the more important varieties of fruit are shown in *outline*, giving often as the profile of the human face, more striking characteristics in form than a highly finished portrait in color.

The authorities consulted—a list of which are given—are sufficient to give great confidence in this work. As a book of reference to guide our fruit-culturists both in the selection of the best varieties, as well as in the various manipulations in their cultivation there is none better than this edition of DOWNING.

THE CULTIVATION OF GOOD FRUIT, ETC.

In the recommendation which we have freely given to the above

work we would take occasion to make a few remarks on fruit and arboriculture in our own locality. Indeed the subject demands not a few but many words. As the cedars which grew on Lebanon formed for ages the continued boast of Syria; so we trust that well selected fruits of the peach, pear, apple, etc., will be the boast of our country; not neglecting those trees which are the pride of our American forests, nor yet those also which are world renowned in classic memory. Let them not be forgotten by us of this utilitarian age. The cedar, the laurel, the cypress and the willow. Let them adorn at least our places of sepulture. And here we would say, that an earnest love ought to be cultivated by our countrymen for these places, and to this end let those objects ever be found in estimation adapted to their proper adornment; much more suitable are they than quarries of marble in the shape of head and foot stones, and chains and iron railings which are necessary to confine the living culprit rather than the sainted dead. Let the ornamental as well as the useful go hand in hand in this, as well as every other department. A correct appropriation of certain trees to the soils best adapted to them is an important matter to all our fruit growers and arbori.culturists, and it is one which has been in some places lamentably disregarded, and in others entirely neglected. It is true a cherry-tree will thrive for a few years on a gravelly subsoil, but it is only to blight the hopes of those who expect to gather fruit; the same to a certain extent is true of the peach. The pear and apple will thrive very well although such soil is not the best adapted.—Our best fruit of all kinds, but especially the former, will be found upon the most elevated uplands in a good loam, underlain with clay. How many of our beautiful Ohio and Miami hills the best soil for fruits in the world, are covered with orchards; alas how few indeed! and how few consider the low grounds inadequate to a great extent to the production of remunerative crops of fine fruit! We see the population threading along these low lands, on account of their accessibility, or rich soil for other products, setting their orchards year after year and generation after generation as if the experiment of raising these fine fruits had not been fully tested on these lands over and over again, while most of the hills remain as bald, bare and neglected as though they were utterly useless in this behalf.—It would be no difficult task to point to thousands of acres, the best adapted to fruit culture of any in our land, upon which a fruit tree

never threw its pleasant shade, or delighted with its luscious fruit, almost exhausted with improvident cropping, and which would yield apples, peaches, pears, etc., in rich abundance, while there are other thousands of bottom lands ever baffling the vain attempts to grow such fruits, and yet are often so appropriated. Nature herself it would seem teaches her lesson plainly, but man will not heed her instructions. The same of other trees; a spruce tree will thrive well for six or seven years on dry sandy soil; but look at it when twenty years old, and its under branches are withered, void of foliage, and the whole plant at a complete stand still. The same species on a northern slope, or at the foot of a hill where the soil is loamy and damp, is quite another picture. Its very boughs clothed in richest green; its luxuriant branches resting on the ground, and so covered that the stem is entirely concealed—and if left untouched, it will remain so for sixty years. Thus of other trees; it is necessary to study their habits, soil best adapted, and obey the dictates of nature. A proper apportioning of our soil is a subject which should receive more attention by our fruit growers generally. It is as important to study the adaptations of our soil as it is those of climate. Indeed climaxology is connected with this very subject. You may see upon this seventeenth day of October, 1857, Dahlias, Geraniums and all the tender plants in bloom all over our hill-tops, while they have been wilted some three weeks or more on our bottom lands. The same is true in the spring; the bloom is later upon the hill-tops, while at the same time the frosts are later in our valleys—two coincident circumstances favoring hills for fruit.

Generally fruit-killing frosts are at least two weeks later in spring, and as much earlier in the fall on low lands than upon our hill-tops. And then again there is a great difference even upon our uplands in relation to frost, depending upon exposure, nature of the soil, etc.; hence, as we have said, the study of our soils embraces essentially the study of climatology.

The adptation of the lands about Cincinnati is unsurpassed for ornamentation and the growing of luscious fruits. How different the bleak, broad, cold prairies of the West which thousands of our population seem crazy to occupy, where one vast monotonous ocean-like view meets the constant gaze, and old Æolus keeps unchained his once imprisoned winds. Here we may enjoy the most perfect union of the useful and the beautiful that earth knows. Trees full

of soft foliage; blossoms fresh with spring beauty, and finally, fruit in abundance, rich melting and luscious, and he who does not enjoy this boon deserves to suffer the full penalty of the declaration; "Whoever does not work, neither shall he eat." For whoever will, may.—ED.

OUR EXCHANGES.

THE agricultural literature of our country has been greatly improved during the last twenty-five years, and it is now more rapidly on the increase than at any former period. There are many works now published of a high order, spreading abroad the light of science, and the results of experience and observation; and many of these works are now receiving from a liberal and reading public, a remunerative patronage.

Foremost among our exchanges we would name as a valuable journal the "Horticulturist," now conducted by J. JAY SMITH, the editor of "Michaux's Sylva, etc., etc.," published in New York at the low price of two dollars a year. No horticulturist should be without this work. It has reached its seventh volume and may be regarded as standard.

"The American Agriculturist," a monthly, designed especially for those interested in the cultivation of the soil, and is devoted to its improvement. Edited by ORANGE JUDD, New York; a most excellent paper.

The "Tennessee Farmer and Mechanic," a monthly record of general Agriculture, Mechanics, Stock-raising, Fruit-growing, and home-interests. This too is a paper worthy of extensive patronage; published at Nashville, Tennessee, by L. P. WILLIAMS.

There are numerous others whose peculiar characteristics we would with pleasure commend, but space prevents. Publications truly valuable, and deserving extensive patronage, we subjoin a few, not perhaps as deserving above many others, but such as have come under our special observation: viz: "The Valley Farmer," published at St. Louis and Louisville, by H. P. BYRAM. "The Michigan Farmer," published at Detroit, by R. F. JOHNSTON.—"The Cultivator," at Columbus, by SULLIVAN D. HARRIS. "The Farm Journal," by J. P. HULL, Louisville. "The Spirit of the

Agricultural Press," by ALBERT GORE, West Urbana, Illinois.—" The Ohio Farmer," by THOMAS BROWNE, Cleveland, O., a weekly Family Journal, devoted to Agriculture, Horticulture, Art, Science, Literature and general intelligence. *A number one paper.*

"The Prairie Farmer," published at Chicago, also a weekly, edited by CHARLES D. BRAGDON, and others. "The Inventor," published by LOW, HASKELL & Co., New York, and GEORGE H. DADD'S Boston, Mass. "Veterinary Journal," valuable papers in their respective departments. We would not fail to mention the "Wisconsin Farmer and North-western Cultivator," which bids fair to be a valuable monthly, published by POWERS & SKINNER, Madison, Wisconsin.

These and many other works of similar character are enriching science, collecting facts, and adding valuable stores to that literature which is well calculated for the elevation and enlightenment of the industrial classes, and especially that largest, the agricultural, and they will, if persevered in, ultimate in giving to this however hitherto neglected class a rightful and dignified position.

SUGAR.

A COMPOUND of charcoal and water, says the chemist; so his ultimate analysis tells him, but unfortunately he is not able to prove it synthetically. He can not grind them up again into sugar. Since the introduction of the "Sorghum" the manufacture of sugar has become a matter of great interest to the agriculturist, therefore it may be well to give a brief account of its chemical nature and properties.

All kinds of sugar, however differing in properties, are composed of the same elements, viz: carbon, hydrogen, and oxygen; in the proportion of six equivalents of the first, and five of each of the others. In examining the properties of different sugars, chemistry distinguishes two principal kinds, the one known as *Cane-sugar*, and the other as *Grape sugar* or *Glucose*. The former is furnished, as its name indicates, by the southern sugar cane (arundo saccharatum,) also in the maple, in beet-root, and the sorghum. The latter is found in the grape and many other fruits, and can be formed from starch by long boiling with a small quantity of oil of vitriol and is

also formed during the germination of seeds and in the process of fermentation. Cane sugar is distinguished from glucose by several tests. It crystalizes in oblique four-sided prisms terminated by two-sided summits; grape sugar never truly crystalizes, although it sometimes hardens into a concrete mass. Cane sugar is also much the sweetest, nearly twice as sweet as the other, it also affects polarized light differently, giving the colors in order when turned to the right, while the other requires to be turned to the left. It is also charred by the action of strong sulphuric acid, while the latter is not. But the most accurate method of testing them is by means of salt of copper. A few drops of sulphate of copper and potash being added to a solution of cane sugar, it remains some time a greenish blue, but if the same be added to grape sugar it immediately changes into a reddish yellow.

The flavor of cane sugar, as it occurs in commerce, varies greatly, according to the sources from whence it is derived, for it is mixed with vegetable secretions; but when pure, is a clear white color and of about the same taste, from whatever source it may be derived, but it is very liable to change partially or wholly during its manufacture into grape sugar, or at least into an uncrystalizable sweet, to the great pecuniary loss of the manufacturer. If we make a solution of the best crystaline article we shall find that it can be prevented from recrystalizing, first by boiling a long time; 2nd, by the addition of an acid; 3d, by the presence of an alkali; 4th, by heating to four hundred degrees. It is evident then that the sugar boiler must exercise great care, if he wishes to obtain the greatest amount of grained sugar from a given amount of juice. Science has come to his aid. Noticing that water boils at a low temperature in a vacuum, the *vacum pan* is constructed in which, without the least danger of burning, the water is driven rapidly away. That no acid may remain, lime is added, which, unlike any other alkaline base, forms insoluble compounds, which of course can be easily removed from the liquor, either by settling or straining; that it be not added in excess, blue test paper is put in the juice and the addition of lime ceases, the instant the blue color is not longer changed to red.

By a proper attention to these matters the yield is nearly doubled over the old unscientific methods. But there is a vast field left for discovery and improvement. It is to be hoped that a chemical treatment will yet be discovered by which the whole of the sweet will be crystalized and that all the starchy matter itself may yet be con-

verted into good sugar. The fact that the mere presence of oil of vitriol will transform starch into grape-sugar, gives us faith to believe that something will soon be discovered that will complete the transformation into cane sugar. Hitherto all attempts to effect this have failed. The manufucturer has considered himself fortunate if he could keep the cane sugar already existing in his juice, from relapsing into grape. When the sugar-cane was first cultivated in Louisiana, the planters made only syrup from it, and it was not until the superior skill of a Cuban sugar boiler had shown them that it could be grained, that they gave serious attention to its cultivation.

THE CHINESE SUGAR CANE.

We see the bearing of all this upon the Sorghum, to which attention is now every where turned in the hope that it will prove to be the sweetener of life. We obtained some of the juice which had been expressed some twenty-four hours, and as the weather was warm it was slightly fermented. Its specific gravity was 1,064, treated it with the bi sulphate of lime, but failed to crystalize. On a subsequent occasion boiled some of the cane and thus extracted its juice, making a fine syrup, equal to the best maple, but also failed in its crystalization. This plant is found rich in sacharine matter, and is readily manufactured into a very pleasant syrup, but as yet has defied all our efforts to reduce to sugar. We have seen crystals formed from it, a beautiful specimen was brought before the Cincinnati Horticultural Society, but on examination into the process of granulation, it was found that loaf-sugar had been introduced into it. Accounts have reached us of other successes in this particular, but we are not prepared to give them publicity. To our minds it is extremely doubtful, even if the desired result should be obtained, whether sugar manufactured from this plant will ever become profitable. After summing up our year's experiments, we are prepared to say that from two to three hundred gallons of syrup can be manufactured to the acre at a cost of from fifteen to twenty cents per gallon. It possibly may be brought below this figure, where fuel and labor is cheap. We doubt not many will continue to experiment upon it, and in their zeal may pronounce it a success, and we are not fully prepared to discourage efforts in the culture, but we are frank to confess our zeal has had some abatement in the efforts which we have made.

We have manufactured one hundred gallons of molasses the past

season from three quarters of an acre ; the cane yielding 53 per cent. of its weight in juice. If suitable mills shall be erected having all the apparatus necessary for a complete sugar plantation and have an arrangement to receive the cane as our grist mills do the wheat of the farmer, and shall thereby be enabled to return to the producer a fair proportion of the product, and not a mere toll, less than is now taken on a grist of wheat or corn, it may prove successful, but not without. We shall give our readers more anon on this subject, at present invested with such interest.—*Farm Department.*—B.

SALT.

BY DAVID CHRISTY.

Its importance—extent of consumption—supply from Kanawha—consumption in Europe—its history on the Kanawha—qualities of Kanawha Salt—neglect of Virginia Legislature.

INFORMATION in reference to any of the indispensable articles of consumption is always interesting to the people. It is not often that writers take up the subject of salt; it will, therefore, not be a stale topic burdening the pages of the CINCINNATUS. Very recently we have collected a wide range of facts upon the sources of supply and the extent of the demand of this commodity for the United States. They were obtained while on a visit to Charleston, Virginia; and include a history of the salt manufacture in the Kanawha valley.*

The consumption of salt in the United States is estimated at 25,000,000 of bushels, of which about one half is imported. A year or two since the Kanawha works furnished 3,500,000 bushels, but the quantity shipped is somewhat lessened at present. This is not due to any diminution in the supply of salt water, but is owing to the want of facilities for the transportation of the salt to market. The Kanawha river is the only outlet of the manufactruers to the Ohio, and it is not so improved as to allow of constant navigation. There seems to be a culpable neglect, by the Legislature, of the in-

*These statistics are very full and satisfactory and were compiled by Dr. HALE, of Charleston.

terests of Western Virginia. It has inexhaustible sources of wealth, but for want of public improvements to transport it to market, the coal, iron and salt all lie in its mountains as so much worthless rock.

The consumption of salt in France is estimated at 19½ lbs, and in Great Britain at 22lbs, for each inhabitant; while in the United States it is about one bushel of 50 lbs. to each inhabitant. This difference between the United States and foreign countries is doubtless caused by the larger number of live stock raised with us, and the greater amount of salt meats which we prepare. From these data, the importance of the trade and manufacture of salt can be estimated.

The existence of salt water on the Kanawha was known as early as 1756. The first salt ever made west of the Alleghanies, in which any white person was engaged, was on the Kanawha. This event occurred one hundred years since, and the salt was made by an ancestor of Dr. HALE, of Charleston, while a captive among the Indians. Subsequent to this, the white hunters found that the valley of this river was resorted to by Buffalo and Elk, in search of the salt licks which existed in many places. The Indians, also, visited it to boil salt for their own use, even after the white settlers began to encroach upon their territory.

The regular manufacture of salt, by whites, was commenced on the Kanawha about the year 1808, and has continued ever since.—The salt water was discovered first on the surface, by digging in the salt licks, and the wells were gradually deepened until within the last ten years, when they have been sunk, generally, to a depth of about 900 feet. Since the completion of the boring to this depth, a uniform flow of salt-water has been constantly supplied by the wells, and no fear of failure is entertained.

The manufacture of salt on the Kanawha has been attended with many fluctuations of fortune. When the salt factories have been placed under the control of one directory, the business has usually been most prosperous. The first company formed, paid in a capital of $8,000 per share, and divided $60,000 per share on closing operations. Another company made 300 per cent. upon its capital. Others succeeded very well, also, and efforts have recently been made for a reorganization of the business upon a permanent basis.

Attempts have recently been made to disparage American manufactured salt, and to impress the public with the belief that it is

necessary to use the foreign article. It will be well, therefore, to present what is claimed for Kanawha salt, by those who are most familiar with its qualities Analyses of the salt and brines have been made, and it is said to have less *lime* in its composition than any other salt. It is also claimed that it is entirely free from *sulphate of lime*, a property which renders the New York salt so objectionable for curing meats and that it contains some other ingredients, in greater quantity than any other salt, which add to its curative or preservative qualities. Hence its popularity, wherever tried, for such purposes. The properties alluded to are the *chlorides of calcium* and *magnesium*, which this salt contains, and which, by reason of their deliquescent qualities, cause its absorption more readily, and never allow it to cake on the surface of meats.

The reputation of this salt among the pork packers of Cincinnati is well known, and it needs no recommendation, at this day, from the pen of any one, to ensure its sale. We allude to the subject only as a matter of public interest, and to point to the want of foresight in the Virginia Legislature, in not making provision for the development of the immense mineral wealth of the Western part of this State. The product of coal, salt, and iron, in a few years, by proper encouragement, would add very many millions of dollars to the Tax List of the State, and furnish employment to hundreds of thousands of laborers, whose willing hands would add immensely to her resources.

HOG CHOLERA—ITS CAUSES AND PREVENTION DISCOVERED.

[The following communication is handed us by a correspondent on a subject of general interest.]

$25,000 PROPOSED REWARD ON HOG CHOLERA.

PROF. RUSSELL COMSTOCK, Terra-culturist, of Mabbettsville, Dutchess Co, N. Y., claims to have discovered the Cause and Prevention of this disease on farms and in pens. He also claims to show in what cases and how cures are sometimes effected.

Prof. C. offers to put any two healthy swine in separate pens, and

to give either one of them the disease within two weeks while the other shall remain healthy; and to cure by removing the cause of the sickness, the same as exists at the distilleries and on farms.

Proprietors of Distilleries, daily visiting the Merchants' Exchange at Cincinnati, O., have subscribed $4,000, and $6,000 more is promised by six other Distillers, toward raising a reward or bounty to induce Prof. COMSTOCK to disclose, confidentially or otherwise, his knowledge on this subject to them; payable after the discoveries are known and proved by each subscriber to the fund, to be effectual.

Persons wishing the information and willing to subscribe to the proposed reward, can obtain further information by writing to either of the Distilleries or Feeders in the vicinity of Cincinnati, O., or to Prof. COMSTOCK, at Mabbettsville, New York.

Prof. COMSTOCK states that he made the disvoveries at Higginsport, O., last March, and that all his observations made since confirm his first impressions made at Higginsport.

The ravages of this disease have been enormous. Some farmers have lost hundreds of their hogs by this sickness, and some have lost their entire stock, every hog by it. Some Distillers have lost one half of their hogs. One Ohio Distiller has lost within fifteen months by the sickness $75,000. Another Distiller has lost $10,000 in the last three months by the malady. Some Drovers estimate the loss of pigs by cholera at more than one half of all produced this year in Ohio and Indiana. This disease has also recently made its appearance in a most malignant form in Tennessee. It threatens the destruction of the product, not only by diseasing it, but by rendering it so extremely precarious that persons will turn attention to something else as many farmers are now doing.

Thousands of bushels of Distilled corn are daily thrown into rivers on account of the malignity of the Hog cholera. If possible, every Feeder of Swine should know the Cause, Prevention, and Cure. This disease is a National calamity, extending throughout the length and breadth of the Union.

Reference by consent to, Messrs.

MARK BUCKINGHAM, P. M., Miamiville, O.,
THOMAS GAFF, Aurora, Ind.,
ALEXANDER INGRAM, Cincinnati, Ohio.

N. B.—Farmers generally who have heard Prof. COMSTOCK disclose his *System* of Agriculture, offer $5 for his knowledge of the disease

and the remedy for their private use only, without waiting to test it.

This is the first article which has been written for publication on the Professor's discovered Cause and Prevention of Hog Cholera.

Nov. 1857.

COMSTOCK'S SYSTEM OF AGRICULTURE.

Signed by Experimentors of Hamilton, Clermont and Warren Co's., O.

MASON, O., Nov., 1857.

PROF. RUSSELL COMSTOCK, of Mabbettsville P. O., N. Y.

DEAR SIR:—We are pleased with our Terra-culture experiments, made since hearing you disclose Terra-culture last Spring at Mason and Montgomery, O. They surpass our high expectations, where care has been taken to follow the dictates of your system, or botanical discoveries.

We hope you will meet our Terra-cultural Society soon at JAMES BOWYER'S, at 10, A. M., to initiate such of our friends as wish to learn the principles and practice of Terra-culture.

We believe that not any one in this section of the country has any rational claim on you for either of the three rewards, amounting to $1,200, which you offer to be detected in error on Terra-culture.

This year our Terra-cultured Peach and other trees, Irish Potatoes, Sweet Potatoes, Water Melons, Cabbage, and Tomatoes, Corn, Oats, and other crops have excelled common cultured crops from 25 to 100 per cent. and upwards ; and the Terra-cultured crops have been grown with less labor and expense than those of common culture. The growing crops of Terra-cultured wheat and barley appear extremely well. Your discoveries appear to raise the practice of agriculture to exact science; and the method is one which cannot be changed without injury to the crop, and which no man of truth will attempt to expose or eommunicate, except yourself.

Cordially Yours :

William W. Harper,	James Bowyer,	C. Constable.
W. Wikoff,	Stephen Probasco,	H. P. Bouman,
Wm. G. Ammons,	Asa Smith,	James R. Kendall,
Wm. Cox, Jr.,	Andrew Beagle,	Mark Coffin.

So far as I have been able to experiment on Terra-culture I have seen a marked improvement. Yours, R. CONKLIN.

With the aid of COMSTOCK'S SYSTEM of Agriculture, I have produced ninety bushels, or more, of Corn this year on an acre of upland at Amelia, Ohio, where I have never grown more than sixty burhels on an acre before; and I grew this year's crop with less expense than any previous crop of Indian Corn. ASA SMITH.

CINCINNATI HORTICULTURAL SOCIETY.

(CONTINUED FROM PAGE 479.)

SATURDAY, September 12.

PRESIDENT in the chair. Minutes of last stated meeting, and of the called meeting of the 8th read and approved.

A communication from R. KING Esq., President of School Board, accepting the Society's invitation to the City Schools, was received, read, and filed.

GEORGE CATT was elected to membership.

Mr. SAYRES, on behalf of SAYRES and HUTCHINSON, having been awarded the sum of $8, for the 2nd best specimens of Rustic Seats, claimed the full amount to be awarded, being $15 asset forth in the schedule of premiums adopted by the Society.

On motion of Mr. ERNST it was ordered that the Premium List as adopted and published by the Society, be adhered to in awarding premiums. And under this order the claim of Messrs, SAYRES & HUTCHINSON was after some discussion referred back to the appropriate standing committee for correction of their award.

SATURDAY, September 26.

Vice Presedent STOMS in the chair. Minutes read and approved.

On motion of Mr. HOWARTH, the following resolution was adopted. viz.

Resolved, That the Premium of $5, heretofore offered for the best pint of molasses, and of $5 for the best pound of sugar made from the Chinese Sugar Cane, be extended for competition to the first of January next.

The following named gentlemen were elected to membership, whose application had been made during the Fair. J. W. HAYNES, E. B. MURRAY, HENRY LEWIS, J. H.RENSBURGH, A. MOORE, E. SHORT, GEO. F. DAVIS, C. G. BROADWELL, S. W. HOWARTH, NELSON GATES, GEO. B. MARTIN, F. G. NICHOLS, E. C. WOOD, J. BALANCE, C. E. PIERSON, W. CALDOW, J. J. WRIGHT, J. RANSON, A. JOHNSON, ALBERT E. MOTTIER J. W. RYLAND, W. CAMERON, PETER BLACK, and ISAAC BETTS.

SATURDAY, October 3.

Vice President STOMS in the chair.

MATTHEW MARKLAND, Esq.. was elected to membership. W

The President announced Dr. WAYNE as present, and stated that Dr. WAYNE, in conjunction with Mr. GRASSELLI, would give special attention to the analysis of

soils in their chemical laboratory on Front-street. Dr. WAYNE made some interesting remarks touching the chemical character of our soil in relation to the Grape culture, and exhibited some specimens of powder obtained from analysis of Champaigne Wine.

Mr. W. S. CHAPMAN was delegated to represent this Society at the State Fairs of Connecticut, New York and New Jersey.

On motion of Mr. HOWARTH, Mr. JOHN B. RUSSELL was elected to life member ship of this Society.

The following resolutions, offered by Mr. MILLS, was adopted.

Resolved, That all the fruit brought before the Society for examination be placed in the adjoining room, which is to be open only to the Fruit Committee; that no other member of the Society be admitted therein until after the committee; that then the doors be opened to all the members for a general examination; and that all fruits brought merely for *exhibition*, may be placed in either room.

In view of the important and valuable services rendered to the Society, at its late Exhibition, by Mr. JOHN SAYERS, a motion was made to appropriate one hundred dollars as compensation therefor; whereupon Mr. SAYERS came forward and declined any compensation, and also remitted to the Society a premium of twenty dollars that had been awarded to him for "reck work." Thereupon, Mr. SAYERS was unanimously elected to life membership in the Society by a vote so enthusiastic as to signify—"Well done, good and faithful servant."

Mr. REILY exhibited a beautiful specimen of molasses, made from the Chinese cane, presented by Hon. L. D. CAMPBELL, of Butler County. Mr. CAREY also presented a fine specimen of the African Imphee. Pears were exhibited—one by Mr. RILEY, the "*Des donnes*"—of most wonderful deliciousness—and one by Mr. MEARS (the latter, name unknown) WM. HEAVER exhibited the Carey pear, a seedling from A. PETERS, Esq., of Louisville; also a brilliant array of dahlias—the Fadette, La Jour D'Auvergne, Beauty of Massifs, Scarlet Gem, Scarlet Unique, Boz, King of Whites, Agnes, Beauty of Paris, Lord Melbourne, Godfrey De Bouillon, Admiral Stafford, Duc D'Artemberg, Jeannette, Prince De Ligne, Admiral, Mrs. Johnston, Rosea Striata, Rosea Supurb, Mdame De La Salle, Topaze, Sunbeam, Sathaniel (striped) Charivari, Hyppolite, Gem, Rival, Phidias.

REPORT OF FRUIT COMMITTEE FOR SEPTEMBER 26.

Mr. BUSH, of Covington, presented a beautiful seedling freestone Peach, rather large size, rich and fine flavor; it was reported upon about two years since, and fully sustains the opinion then given.

Mr. BUCHANAN presented the Burry Waterloo Pear, very like the Bartlett or Williams' Bonereteur, but larger—a very valuable, magnificent and delicious pear.

Also, a pear which he bought as the Grey Doyenne, but evidently is the Fondante de Autumne—one of the best and most delicious pears. It is a new Flemish Pear, and no garden should be without it.

A seedling Apple from Mr. WILLIAM L. CARSON, of Cheviot, supposed to be a cross from the Bellefleur, and a red apple very similar to the Bellefleur in shape and size but striped with red.

A seedling Grape, dark purple, from Dr. KETRIDGE; rather more foxy than the Isabella, probably a seedling from it.

A magnificent specimen of COOK's new seedling Peach, from Mr. J. S. COOK, of Walnut Hills ; large size, and one of the best Peaches of the season.

Also another, very like the Red-Cheek Malacoton, but evidently not that variety, but a fine peach, probably Crawford's Late Malacoton.

Mr. JOSEPH TAYLOR presented a new seedling grape ; it was over-ripe, could not be judged of. A peach was presented by the same gentleman, name unknown.

Mr. GARRISON presented the Lemon Cling and the large White Cling.

Mr. MULLET presented a beautiful, rich and fine apple, called the Glendale.

Mr. B. F, SANFORD presented some fine Newton Spitzenburg and Pryor's Red.

A. A. MULLET.

The Fruit Committee selected Messrs. F. G. CAREY and MCWILLIAMS to act as assistants and co-advisers in their deliberations.

SATURDAY, October 10.

President in the chair. Minutes read and amended by stating that Mrs. CAMPBELL—not L. D. CAMPBELL—exhibited the specimen of molasses from the Chinese cane, mentioned last week.

On motion, the resolution of last week was amended in its last clause so as to read : "And that all fruits or other articles brought for *exhibition* shall be placed in the public room."

On motion of Mr. HOWARTH, it was ordered that the report of the several committees be read and adopted by the Society before publication.

Ordered that the report of the Fruit Committee for September 26 be referred back for re-examination.

The Corresponding Secretary laid before the Society *Commodore Perry's Japan Expedition*, the Agricultural report, presented by Hon. T. C. DAY, and Report of the Directors of the Spring Grove Cemetery, for the library, for which the Society rendered thanks by unanimous vote.

An interesting communication was read by Mr. WARD, from Captain N. E GUERIN, late of the French army, on the culture of the grape at Vinona, North Carolina.

On motion, Messrs. HOWARTH and GARRISON were appointed a special committee to examine and report upon the vegetables now on exhibition.

The reports of Fruit, Flower and Vegetable Committees were presented, read and, on motion, accepted.

In the published schedule of premiums awarded at the late Annual Exhibition of the Society an omission occurred, the correction of which is due to Mr. J. S. COOK—the premium of $10 for the best design of living plants.

Mr. MOTTIER exhibited some exceedingly "tall" specimens of the Chinese sugar-cane.

AN exchange paper says: One little garden patch of ours has been profitable, very, this season. The snails ate up the cucumbers, the chickens ate up the snails, and our neighbors' cats ate up the chickens, and we are now in search of something to eat up the cats

TO CORRESPONDENTS.

S. W. The gravelly matter you send us contains nothing of value —the shining particles are mica. All is not gold that glitters.

R. L. G. Instructions for grinding lenses can be found in DICK's practical Astronomer.

Dr. S. M. Mr. ROB'T CLARKE, Bookseller, on 6th St., Cincinnati, will import for you any of the London Microscopes at $5.00, the pound sterling, but by purchasing an American instrument you save the duty of 40 per cent.

THOSE who have not received their Feb. Number can now be supplied by informing us per letter.

SUMMARY OF METEOROLOGICAL OBSERVATIONS AT FARMERS' COLLEGE, FOR AUGUST.

MEAN temperature of the month, 76.6 degrees, a little higher than that of the same month last year.

Mean temperature of warmest day the 8th, was 82.3; of the coldest, the 30th, 67.8.

The thermometer was the highest at 2 P. M. of the 8th, viz: 91.5; the lowest on the morning of the 25th and 30th, viz: 60.5, making its external range 31 degrees. The mean hight of barometer was 29.127 being considerably higher than for the same month last year, and yet we had just ten times more rain during the month, than last year, showing that low barometer does not always bring rain. Whole amount of rain during the month 4.060 inches.

SUMMARY FOR SEPTEMBER.

Mean temperature, 65°, this is the same as last year. The maximum hight 40.5. The average hight of Barometer 29.200, a remarkably high range. The amount of rain was .775 of an inch.

There was some frost which did no damage, on the morning of the 23d. and another a little harder on the morning of the 30th.

FORT WASHINGTON
ERECTED 1790 IN CINCINNATI, O.

THE

CINCINNATUS.

VOL. II. DECEMBER 1, 1857. NO. 12.

THE "SORGHUM" AS A SUGAR PLANT, ETC.

SINCE the introduction of this plant into the United States, sanguine hopes have been entertained that it would prove a valuable addition both for forage and sugar. It was introduced to us through our Patent Office Reports for 1855, with the following flattering recommendation.

"This plant—the Sorghum Saccharatum—perhaps has stronger claims on the American Agriculturist than any other product that has been brought to this country since the introduction of cotton or wheat. The stalks, when nearly mature, are filled with a rich saccharine juice, which may be converted into *sugar*, *syrup*, *alcohol*, or *beer*, or may be used for dyeing wool or silk, a permanent red, or pink; and the entire plant is devoured with avidity, either in a green or dry state, by horses, cattle, sheep, and swine, and its value for feeding animals alone, in every section of the Union where it will thrive can not be surpassed by any other crop, as a greater amount of nutritious fodder can not be obtained so cheap, on a given space, within so short a period of time."

Such endorsement from such high authority, as might be expected in this fast age of ours, when information outflies the wind, set our whole country into a perfect frenzy of excitement.

Thousands of bushels of the seed have been spread, and thousands of acres have been planted, and thousands of experimenters have been employed, from the cook in the kitchen to the chemist in the Laboratory; and lime, and soda, and eggs, and milk, and all other known substances, used in purifying, defecating and neutralizing, have

been resorted to, in order successfully to granulate the saccharine matter extracted, but as yet without success.

We will quote what our reporter from the Patent Office has to say on this subject just one year after, when, as may well be supposed, all the chemical skill which our Agricultural Department at Washington could bring into requisition, has been taxed to the utmost: "The manufacture of sugar from the Sorgho, as well as from the tropical cane, is beset with difficulties, arising not only from the extreme liability and rapid change of the juice to acidify from exposure to the atmosphere as it runs from the crushing mill, but often from the unripe state of the plant itself.

"Hence, in order to insure success, it is necessary that the process be conducted *under certain conditions, modes of neutralizing the free acid, contained in the juice, and the removal of the albuminous matter previous to the evaporation and crystalization.*" Certainly an experience fully verified by all who have experimented upon the juice of this new plant, yet as devoid of any practical information as for one to direct you to fly, without providing you with wings. In truth there is neither the way nor the means of performing the proposed object. You read on, and you have presented some very curious microscopic observations in regard to the structure of the Sorghum, interesting to the physiologist, but to the sugar-maker of no value whatever. Then, after mentioning the difficulties that have beset the path of the sugar-maker in all past time, and the signal triumphs of science, our author winds up his somewhat learned article by expressing his confidence that the same skill directed by the philosopher's stone—"Science"—through the instrumentality of chemistry will yet make sugar from the Sorgho and thereby be productive of the happiest results.

Here, then, is the whole story told in brief. This plant, ushered in with such a flourish of trumpets as a sugar-producer, has failed as yet to meet the high expectations and promises in advance claimed for it, at least so far as producing sugar is concerned.

Let us for a moment examine, in the light of facts, the results which have been furnished us of its saccharine properties and products; compared with those of the southern sugar cane, with which, if ever successful in these respects, it must come in competition.—We find in Harper—7th volume, page 759—in an article on sugar and the sugar region of Louisiana, by T. B. Thorpe, among other facts and

statements, the following in relation to the yield of a sugar plantation of eight hundred acres in the year 1852.

Sugar, *one million three hundred thousand pounds;* Syrup, *sixty thousand gallons.*

This is 1,625 ℔s of sugar and 75 gals. of molasses to the acre, which in value—the former at 6 cts. per pound, and the latter 30 cts. per gallon—amounts to one hundred and twenty dollars per acre. Such an average on so large a plantation must be regarded as a pretty fair example of the sugar estates of Louisiana. Now compare with these results those furnished under most favorable circumstances by the plant proposed as a competitor. The Sorghum, from all the facts gathered, where the best machinery for crushing and manufacturing has been employed, will yield from 150 to 200 gallons per acre of a very fair syrup, but no sugar, which at 30 cents. per gallon —taking the highest figure, supposing its saccharine value the same, which is not the case, having more glucose in its composition—would reduce it to seventy-five dollars per acre or about one-half the value of the former product; this, provided the cost of growing and manufacturing were the same, would be clearly against the latter. The canes of the Sorghum will yield, when crushed, 53 per cent. of their weight in juice, and when ripe and in a proper state this juice has a specific gravity of 1.062, and must be reduced from one-sixth to one-eighth its bulk or it takes from six to eight gallons of juice to make one gallon of it in syrup. Hence, the quantity of fuel, time and labor necessary in its reduction is considerable. The large amount of albumen contained in it, and the difficulties attending its proper purification, still add to the expense.

Up to this time it has defied all the efforts put forth to make out of it an economical article of sugar. Whatever success has been had by all the processes that have yet been adopted, is not in a practical point of view, of any avail.

A very fair specimen of syrup was brought before the Cincinnati Horticultural Society, exhibiting some beautiful crystals, throwing the society into a pleasant wave of excitement; but how soon dissipated, when it was learned that in the process of manufacture, loaf sugar had been introduced to promote granulation.

We do not deny that granulation has by dint of effort been effected to a small and imperfect extent; we have statements from various sources to that effect.

We here subjoin from high authority on this subject, the answers to the following interrogatories:

"1. Do you succeed in granulating the syrup of the Chinese cane in a satisfactory and profitable manner?

2. Is the sugar of the Chinese cane, grape, or cane sugar, or a mixture of both?

3. Would you recommend farmers to cultivate the cane as a crop with a view to the production of molasses, and the sale of the syrup to sugar refiners?"

The following is Mr. Belcher's answer:

"Office of Belcher's Sugar Refining Co.,
St. Louis, October 26, 1857.

Dear Sir:—Yours of the 23d, making inquiries relative to my experience and success in granulating the syrup of the Chinese sugar cane, is received, and I have carefully noted your remarks.

I have made some experiments with the syrup, but have not succeeded in granulating it, and I very much fear that it will prove a failure so far as sugar-making is concerned, and if it will not granulate, the syrup does not contain a due proportion of cane sugar.

I am not prepared to say that refiners would buy the syrup of the Chinese cane to any extent unless it will granulate. Some large fields of this cane have been planted in South Carolina, Georgia, and other Southern States, with a view of testing its sugar-making qualities, and if they do not succeed in granulating the syrup into sugar you may begin to doubt its virtues as a sugar-producing plant.

Very respectfully yours, Wm. H. Belcher."

He further adds.

"N. B.—A Louisiana sugarplanter made this season some seventy-five barrels of the Chinese cane syrup. I have seen his report; he could not granulate; and some barrels of this syrup from Louisiana came to the market. The color was good, but the taste slightly acid —not so sweet as the syrup or molasses of the sugar cane—and am under the impression that it would ferment rapidly in warm weather.

Yours, &c., W. H. B."

Here you have the experience and views of one who understands the chemistry and modes of manipulation in the manufacture of the common southern sugar cane, and they fully corroborate our experience after repeated trials in our Laboratory.

Now the rationale of the matter, revealing the chief difficulty in

the way of success is, the liability of the juice to acidify, and consequently to make it impracticable to produce sugar from it. In France, various experiments have been made. As yet nothing definite has been determined, but opinions are expressed that the juice of the Sorghum is crystilizable—that is, that the *cane sugar* can be produced from it. But by a test experiment it has been shown that though the juice contained 16 per cent. of sugar, there was only ten and one-third per cent. of it *crystilizable* or *cane sugar*, while the remaining five and two-thirds per cent. was *glucose* or *grape sugar*.—The drawback on the value of this plant, then, should this test approximate the true result, can be readily calculated. One ounce of *cane sugar* has the same sweetening capacity of two ounces and a half of *glucose*. This proportion will hold good in the market value of molasses as well as sugar.

As some of our readers may not know the difference, we may state that there are large quantities of sugar made in Europe from *starch*. It is called *granular sugar* or *glucose* to distinguish it from *crystaline sugar*, the term employed to distinguish *cane sugar*.

The Sorghum produces both kinds of sugar, and is consequently lessened in value in proportion to the amount of glucose it contains. The acids present in the juice, acting upon the cane sugar, are capable of changing *it* also into *glucose or grape sugar* and thus rendering it impossible to make crystilized sugar from the Sorghum. How are these difficulties to be overcome?

In relation to the Sorghum as a forage crop our experience has been but limited, but would say that to us it presents even here its objectionable features.

Before it is ripe it differs but little in its properties from Indian corn, not having as yet developed the saccharine element. When ripe and filled with juice it is difficult to dry or cure, and the heat renders it almost certain that the juice will acidify and ferment, thus making the product useless if not injurious. The seed-heads also, unless thoroughly dried, will heat when thrown into a heap, and even if properly dried and preserved there is great contrariety of view as to its value, some maintaining that the seed is positively injurious, the grain being surrounded with a bitter pellicle, containing, as the Patent Office Reports says a valuable dye stuff, for coloring wool or silk. There is no doubt but that the Sorghum Saccharatum contains all the properties to make a large return of alcohol, and for this it may be profitable, and if the bagass be found to con-

tain a sufficient quantity of saccharine matter, only to make a small economical return by distillation, it may add sufficient to redeem the Sorghum from being a failure ; but without such result we think it at least extremely problematical whether it will at all meet the sanguine expectations that have been entertained, and the large promises made in its behalf; and in this latter suggestion there is a moral bearing which, with our present alcoholic productions in such abundant supply and use, we by no means love to contemplate. Hence, upon the whole, we are frank to confess that so far from facts justifying the high expectations held out in behalf of this plant, as to place it along side of our wheat and cotton, the economy of its culture may be regarded as very doubtful.

It was introduced under the most favorable circumstances to insure success ; at a time when the prejudices against the south, and the products of slave labor would lead the more zealous to make efforts and sacrifices in its favor, thereby to supplant the product of slave with free labor and render the north more independent in this respect. But all must be aware that if the Sorghum is to succeed, its success must depend upon its comparative value with the sugar cane of the south. To ascertain, this numerous well-authenticated facts and experiments must be collected. Our object, in the facts and statements here introduced, is to bring this subject fairly and truly before the public and thereby avoid a ruinous waste of time, labor and money, and all those disabilities of a physical and moral nature attendant upon perversely persisting in error.

In relation to reports on the Sorghum, we are well assured from our own experience the past summer and fall, and the style in which they are written that many of them are extravagant exaggerations calculated to mislead, and ultimately wrongly to direct the enterprise, capital and labor of the people, in opposition to all the known laws of political science, and finally prove prejudicial to our national prosperity.

If there is one class of mind in the world with a native antipathy to improvement, there is another and much more really mischievous which seems ever determined to caricature it. As every animal, however noxious and seemingly useless, has its appointed prey, so do the natural enemies of all scientific advancement in their own art, trade or calling, whatever that may be, find a never-failing source of triumph and enjoyment in cracking the bones of blundering enthusiasts

who, like dogs, bay in the path of progressive truth, only to burlesque and caricature.

It has puzzled philosophers of moderate patience and observation to divine this fact, how it is that gentle-handed nature deals with such tolerant forbearance over her inter-squabbling and mutually intolerant children. They wonder she interferes so seldom and with such mild measures to rescue her beleagured sons; if not from the foes in front, at least from the fools behind, that go about exaggerating every fact like street news-mongers, dressed it may be in the livery of science like a monkey in regimentals, and understanding and appreciating the language they use, about as much as the organ-grinder does the opera tune, that his crank works thread-bare.

A *good*, *solid*, *impenetrable advocate of old-fashioned ignorance*, falling foul of one of this class will often make him a prey at a single mouthful, and no harm either, but the mischief lies in the corollary, or consequence—"*So much for your Science.*"

Agriculture has suffered enough from this source, and we fear the cup of her trials is not yet full. Counterfeits of every sort and shape have crowded at the heels of every improvement, every invention, every good suggestion, every valuable discovery, till art and science both may well be ashamed of the sound of their own names, especially in agriculture, and are fain to wear *smock-frocks incognito*. May true science, hand in hand with the arts and her children, drive these pretenders from their intrenchments.

HOWARD PREMIUM FOR THE BEST WHEAT CROP.—Mr. H. B. HOWARD, manufacturer of Manny's Combined Reaper and Mower at Louisville, has offered, through the Kentucky State Agricultural Society, one of these machines, with Wood's Improvement, as a premium for the best 25 acres of wheat grown by any farmer in that State, and a like premium for the same purpose to the farmers of Indiana, to be awarded by their State Agricultural Society.

CHRONICLES OF A CLAY FARM.

CHAPTER VI.—"CALX"—AND RECALCITRATION.

A LONG, long time—what a dreary time—is winter! Well may all Christendom have lent its comfortable efforts through ages past, with a long and a strong pull and a pull altogether, to give a point and a zest, and a time of almost legislated conviviality, in the Christmas fireside, and a good fellowship, by way of indoor barricade, a sort of jovial rebellion; against the long despotism of Jack Frost. It is hard to convey an adequate idea of the bounding pleasure with which—after watching, month after month unchanged, the rugged, uncouth results of that piece of autumn workmanship lately described—I saw at last the wholesome-looking combination of such a heterogeneous variety of earths that had lain ice-bound, as if for perpetual and stereotyped ugliness, now melting down, under the genial influences of spring. and that blessed pair of harrows into what old EVELYN must have especially had in his eye when he talked of "a *roscid* and fertile mold."

"Easy work it is to preach about farming experiments," thought I to myself, as I wandered in the gloomy evenings of December and January, among the square clods that lay exumed upon the surface of the field, with the spade-mark inscribed in frozen obduracy upon their sides, like the blocks in the quarries of Syracuse, dated with the tool-marks of twenty centuries ago! "Easy work to preach experiments, that take a year to make, and another to judge of, and another, and perhaps another still, to see the whole result of—to men whose 'threescore years and ten' were hardly a sufficient lease in which to scrape together a dozen facts beyond what their fathers knew! A pretty homily upon Leases there lies in these clods that have been keeping sentry here these three months, while the Manufacturer has worn a steam-engine from new to old, and the trader has turned over half his capital, and briskly put in a fresh stock of 'Spring Fashions.' In the name of common sense, that useful 'raw material' which England has as plentiful as Coal and Iron—what dead carcase has been chained to this living art of Arts, to clog its progress and to rot its vital powers, by adding the curse of Insecurity of Tenure to its already arduous and time-and-patience-

needing problems! If it be Mind that acts upon Matter, what is it that acts upon Mind? Surely Motive and Interest, and that Assurance of Results, which the most ordinary prudence demands, and the most buoyant energy feeds upon—or dies.

"Well may a bold experiment startle minds which have been drilled into the habit, because into the necessity, of contracting every prospect, every out-lay, every mental conception, within the compass of an 'agreement for a year!' If there is an attribute which more than others marks the distinction of the human mind, from that of the lower animal creation, it is that it looks forward; if there is an art that more than others demands the powerful and prolonged exercise of this faculty, it is—*Education*. Does the pen need to draw the conclusion? Can the reader of 'Sermons in Stones' decipher no Leases in Clods, no schools of instruction in 'Calx, Silex, and Alumen?'"

Winter, however, like adversity, has a surprisingly improving influence upon —— things made of *Clay*. As each little thaw toward spring-time, came and went, the gradual process of granulation had broken down the once wet and reeking spadefuls into the form of dry, loose Mole-heaps. As the tines of the harrow jumped and danced freely through the mingling mass, what a changed appearance was left behind! a dry, rich, earthy scent, sweeter than the breath of an Orange-grove, or the evening incense of the hay-field, rose gratefully up to meet the fresh morning beams that shot their influence *for the first time* on the new face of an old field; the busy gossamer drew its glittering net-work from point to point in a thousand geometrical forms over the level surface.

"Well! I never thought to see it look like this! I should think any thing would grow here!"

Such was the remark I overheard. I suppose it came from one of the horses; they were the only living things present that were not pledged to an opposite opinion. The observation, however, if ill-timed; it chimed in with the thoughts that were tumbling over each other in theoretical confusion through the brain of the incurable Chronicler. What would have been thought of him had he dared to utter them aloud, as they came and went in this strange fashion—

"The Protoxide into the Peroxide! ha! a beautiful change that Clay, Sand, Peat—and Marl too! a goodly compound. How is it that a sort of instinct seems to anticipate the conclusions of science

that the mind outstrips the page, and one's assent to each proposition seems paid in advance, almost before it falls due? Is science intuitive? then why is it Modern? Why have centuries upon centuries—sixty centuries—passed, and no Science till now! Why now? Could LIEBIG answer that? I'm afraid even his 'Quantitative Analysis,' his grand discovery (for so it almost seems,) of the magic residing in those words, '*Numero, Pondere, et Mensura,*' would be baffled to resolve that problem.

"This field for instance! they never thought to see it look like this; now, could they answer the question—What does it yet want! —Yes! the instantaneous reply would be, Lime. 'Why?' inquires Thory; 'because it would sweeten it'—would be the answer. But why? Theory again asks. Practice is silent. What! silent, after sixty centuries of '*Experience!*' Can nobody give us an answer— the truth, and the whole truth of the operation of lime upon soils?" The Chemist attempts an explanation.

"Its effect arises from its avidity for combination; it searches out free acids, as a ferret does a rat, and instantly closes with them. Sulphuric, phosphoric, silicic, nitric, humic, and last not least, the 'great dissolver,' Carbonic acid; all these it makes known, by seizing upon them and becoming their base; thus disintegrating as it were, and reconstructing the elements of the soil, and exciting to a new action the sluggards of nature wherever they are lurking. It is the composer and the decomposer, for nature can not suffer either process, but fertility must follow: *re*-composition (growth) has begun ere *de*composition is over; does a latent atom of organic matter stand inert for one instant? it is *at him*, like a policeman; 'come kip movin!'"

But is this all?—is this half?

Well may the "Incoming tenant" ask "*How far is it to the lime-kiln?*"

CHAPTER VII.—"EARTH"-STOPPING.

Among the various changes upon the aspect of a farm, necessitated by modern practice, there is none which causes a greater degree of consternation in the immediate vicinity, than the removal of the Hedgerows. There is a kind of time-honored recognition and respect accorded to these huge "mounds," four or five feet high, and broad in proportion, with the running accompaniment of Jungle

sprawling at its pleasure into the plow-land alongside, which it goes to the very heart of the laborers themselves to desecrate, or reduce to the regulation-standard. It is all very well under the glowing candle-light, with the map of your farm spread out before you, and its hideous hedgerows reduced to mere lines of sepia or lamp-black, to cut and carve, at your will, ten or twelve large square comely-looking fields out of thirty or forty unaccountably-shaped rhomboids undreamt of in the hardest book of Euclid, and then to go and dream the realization of your symmetrical example-farm, the wonder and delight of ardent agriculturists; but what a change comes over the spirit of the dream, when you mizzle out o'doors in the foggy November morning, and come to a dead stand-still at the tangled side of a fence (Bless me! why it looked nothing on paper!) which has furnished the talk of many a hunt-dinner for some centuries past, for the splendid leaps and the splendid "purls," it has given rise—or given fall—to. Its hight—its enormous width—its insurmountable, impracticable look altogether, require an eye quite as steady, and a heart quite as firm as the hunter's, to take it.

It seemed like sacrilege—indeed, I felt self-convicted, at the first daring onslaught upon these giants of the olden time. I was obliged to "take a run at it" mentally, as it were, as many a man and horse had before done boldly and in the flesh; and stuff my ears against the covered reproaches of the workmen.

"Famous bank for rabbits, this here, sir! I've know'd twenty couple killed in a day out of it, in my time, when Squire——"

"Ah! well—never mind,"—quoth I, sorely and interruptingly; "but what's that—what have you got there?"

"This, sir? Lor' blesh ye! this is the earth where that ould vixen lived as gave you such a run last winter: I've know'd a litter o' seven whelps reared in this hole, an' heard 'em yelping an' howling o' the summer evenings as if the' wondered when upon airth cub 'unting 'ould begin!"

This was the climax, usually. No martyr ever suffered more than I used to carry home to breakfast *imo sub pectore*, by way of travesty to my over-night's imaginative enjoyment at the paper-prospect of large enclosures and unimpeded plow-shares.

But the day of compensation came at last; and with it came my first discovery of the extraordinary sheep-sightedness of spade-and mattock-wielding humanity. Not till the fence was clear away, bank,

thorns, pollards, ash-trees, rabbit-holes, fox-earths, and all, did I hear the exclamation—

"Well! this *is* a wonderful alteration to be sure; why, I never thought to see it look in this way! It's quite a beautiful field now!"

"One cheer for the Map after all!" quoth I to myself, as at next candle-light, down I sat again over the bird's-eye view of acres which I now began to find were trodden by bipeds and quadrupeds with about equal perception of their plan and bearing. Who would be without an accurate map of his farm, who once knew the cumulative triumphs that it brings of skill and headcraft, as lavishly accorded in the end, as denied in the outset, by the gregarious juries who sit in judgment on his acts?

Down went fence after fence! each with precisely the same prologue and epilogue of blame and praise; for all the successful issues in the world never stop or stay that rampant, "inconvertible" thing, criticism; that battery of inextinguishable pop-guns that is never silenced or taken by assult. Down however went the fences notwithstanding: and certainly, without reference to any of the more subterraneous improvements, of drainage, cultivation or otherwise, the mere accession of business-like appearance to the farm when denuded of its miles of jungle, was what Dame Quickly would call "a thing to thank GOD upon."

It would be a difficult but an interesting task to make out a calculation of the economy per acre, of the riddance of these hideous and useless strongholds of roots, weeds, birds, and vermin that afflict the farms of merry England. Unproductive in themselves of any thing that is good—for even the timber they contain is very rarely so—they are equally an obstruction to the plow that toils for bread, and the eye that wanders for beauty. Far be it from the old Chronicler to depreciate the "tangled copse," or the "boundless contiguity of shade" that glides the early remembrance of some, and the imagination of all; that lives in the tasteful pages of EVELYN and PRICE, or in the "charming bits" of WILSON or NASMYTH; but where can be the pictorial or moral beauty of a great, crooked, artificial mound surmounted by a dead fence serrated into gaps and "raspers," or at the best, hogged into dreary uniformity that cuts the blessed land-scape from the eye, by a man-made barrier of stakes and "witherings." "Take way the curtain that I may see the picture" might any mortal say, who, from his first lessons in Geography had learnt that a man six feet high has a sort of physical right to a

panoramic horizon of three miles on this round globe of ours, even in a district like mine, where not a hill was to be viewed.

To be sure there is one rather formidable consideration—the hedge-pheasant-shooting—"*beating the out-sides*"—that pleasant October skirmishing that precedes the coming up of the heavy artillery at Christmas; but is it not rather dearly retained, when land is being cut up for railroads all around us, at two or three hundred pounds the acre and scarcely a vestige or margin left to inclose for the "more, more" cry of an increasing population?

It is, at the least, a consolation to think that these huge banks have no prescriptive right; that when Dr. JOHNSON told us "GOD made the country," he did not mean to deny that man made the hedge-rows, or the conclusion that what he had raised up, he might pull down; especially when it is discovered, as each may prove for himself, that the Thorn grows much better, on the level.

No! let the Park and the Pleasaunce have their varied and picturesque alteration of bush, and tree and green-sward—of broken masses, and winding glades, and labyrinthine glens; and let the forest have its leafy screen, its deep and devious mysteries of light and shade; but let the field of the husbandman have that beauty of its own—the charm that nature delights to throw over every thing in proper turn and place. The waving and extensive corn-field, the deep rich verdure of the green crop, the dark and mellow surface of the turned-up soil, owe little of beauty to the net-work of intersecting barriers that arrest at once the plow and the prospect, and carry a running nest, of robbers, like earth-works of the enemy, through the fair fields of human skill and labor, and sacrifice at once the food of man and the profit of the grower.

It is the eye of Prejudice, not of taste, that sees beauty absent from utility. Even in the flattest districts, even upon the "Clay Farm" itself, there is an undulating outline, a morsel of the varied profile of our mother earth which never revealed itself to the eye until those impediments were abolished, which—like Ignorance—make us mistake for a dull, *straight line*, that which is only a part of the great Circle.

FASCINATION.

Its Theory—A Well Observed Case—Results Unfavorable to the Popular Belief—It Loses its Poetry.

BY DAVID CHRISTY.

THE power of serpents to charm the smaller classes of animals, which they capture for food, has long been held as an undoubted fact. It has also been believed that they could fascinate the larger orders of animals, so as to bring them within the range of their deadly fangs; and that even the intellect of man is not exempt from their influence. The common theory upon this subject gives to the serpent, having the power of fascination, an ability to gain the attention of its victim, to paralyze it as if by an electrical influence, and to attract it toward itself as if by magnetism.

Birds, more generally, are supposed to be the victims of these charmers. They have been seen moving around serpents in such a manner as to indicate, in the opinion of the observers, that they were under the power of fascination. The testimony upon this point describes the birds as moving in a circle or semi-circle around the serpent. If upon the ground, they run, with extended wings, gradually narrowing their circle of motion, but never stopping for an instant, till within a few inches of the serpent. Then, as if conscious of their peril, and just at the moment they are about to be seized, they fling themselves backwards, on the wing, so as to be out of the reach of their terrible enemy. The birds, thus escaping for the moment, stop, and survey the foe from their distant position. This seems to be a fatal dallying with danger. The serpent's eye, quick as the lightning's flash, again darts its mysterious magic into theirs; and again and again they advance and recede, as if drawn, irresistably, toward the point which has now become the all-absorbing center of attraction. If the serpent is upon a tree, the bird flutters around it, advancing and retreating as when on the ground.

The popular interpretation of these movements of the birds is this: the serpent establishes a connection between itself and them, by which it controls their will, and draws them within its reach. In accomplishing this object, it does not go in pursuit of them, but lies

in coil, with head erect, awaiting their approach. It appears, however, that the serpent's power has its well-defined limits, and its own peculiar philosophical phenomena. If the movements of the birds toward it are due to the attractive power employed by the serpent, then the law of attraction in this case is a positive reversion of the laws of magnetic attraction. The attractive power of the magnet is greatest when the body acted upon is in contact with it, and it loses its force in proportion to the distance to which that body may be removed. That is to say, it requires more force to remove a piece of iron when in contact with a magnet, than is demanded for its removal when at the distance of a foot or two from it. But such is not the case with the serpent. In the supposed fascination the birds, though unable, while at the distance of ten or a dozen feet, to resist its attractive powers, are able, nevertheless, at the last moment, when the devourer is in the act of striking, to break the charm, and, by a reverse movement, to fling themselves instantly out of danger's way.

Such is the theory of fascination, as based upon occurrences that have been witnessed by many observers. Its philosophical defects may be inferred from the hints already given ; but whether such transactions prove that serpents possess the power of fascination, or that the observers are mistaken in their interpretation of facts, will be better understood, when a case is stated which was observed by myself.

Business led me to cross the Chilhowee mountain, in Tennessee, on the 27th June, 1857. When near Montvale Springs, I observed two birds at a couple of rods distance from the road, performing movements new and strange to me. They were in an open space, near a small stump, but did not take to flight on my approach, as they would have done under ordinary circumstances. On reaching a point opposite to them, I noticed that they were the brown mocking bird, and that a very large black snake lay coiled at the side of the stump. On seeing me, it suddenly began to uncoil itself, and move off as if to make its escape. But before it had stretched itself to more than half its length, the birds flew at it in the most energetic manner. Instantly the snake whirled again into coil in its former position. The male bird then commenced to run and skip with great activity, in a semi-circle, the snake being the center, and gradually closed in until within a foot or two of its coils, when, with a sudden dart forward, the bird thrust its head toward that of the

snake, and, in the same instant, threw itself backward, alighting upon the ground at the distance of about ten feet. Before the male had closed this feat, the female had commenced a similar movement. All the motions of both birds were made with extended wings, as if ready to fly in a moment. By the time the female had thrown itself back from the snake, the male was in position again, repeating the same movements as at first. In the meantime my horse had carried me some four or five rods into a cedar thicket, where I dismounted and tied him to a tree. All this took place in a minute or two, and as I had only an indistinct view of the action of the birds in passing, I took a favorable position for observation, noting all that occurred with the strictest care, so as to make up an opinion as to the scene before me. From the first movement of the male bird, in thrusting its head forward into close contact with the snake, I believed I had at length hit upon a case of the so-called fascination, and was determined to observe it in a philosophical manner.

It was half past one o'clock, P. M. The birds were still eagerly at work when I turned my eye upon them, after the interruption of hitching my horse. They were panting as if greatly fatigued by long exertion, but manifested not the least disposition to remit their efforts. They were, if not fascinated, at least so earnestly enlisted in the affair on hand, as to disregard every thing around them. I soon found that I could choose my position, in the open space, where all their motions could be observed.

The snake lay in its coil, with head erect and drawn back, so as to be in the best possible position to strike and seize the birds as they advanced. The many convolutions of its lengthened body moved in graceful curves as its glittering head followed their motions. Its eye sparkled in the sunlight as the polished diamond, while its movements gave to its ever-shifting scales the brilliant hues of the rainbow. Ever and anon, as the birds approached, it would strike at them with extended jaws exhibiting a malignity of disposition that portended death to them, had they been within its grasp.

A few minutes satisfied me that I was present at a *battle*, and not at a scene of *fascination*. At each approach of the birds they struck the snake with their beaks, or else with their talons, when, generally, but not always, it darted forward at them, only to find that they were gone. The snake in striking, could never project itself more than about two thirds of its length, but its defense was made with determined courage. Its position by the stump protected

it in the rear, so that the birds could only approach it in front. They were as adroit in their attacks, as it was resolute in its defense. The snake, in attempting to seize them, could not curve to either side so as to follow their motions, but invariably shot forward in a straight line. The birds, in advancing to the attack, by a circular movement were certain of being away from the point at which it aimed, and when its hideous jaws smacked together, where it expected its prey, it had nothing in its grasp.

This contest lasted, after I reached the spot, about twenty-five minutes by the watch. Once or twice during the contest, the snake made a movement to escape up the hill side, but the birds, as at its first attempt, immediately brought it into position again. At last, seeming to despair of success in securing a dinner in that locality, the snake darted off down the hill, towards a grove of bushes and trees, nor turned to the right or left. The birds swept after it pecking, scratching, and striking with their wings, as if inspired with the consciousness that victory was theirs. At this moment I rushed forward and attempted to kill the snake, but my stick broke at the first blow, without injuring it. I then jumped upon it with my feet, hoping to crush its head with my boot heels. In this I failed also, but confused it so as to prevent its escape until I snatched up another club. With a well-directed blow in the region of the heart about four or five inches from the head, I laid it quiet, and proceeded to cut it open. There was not a particle of food from one end of the intestinal canal to the other; it must therefore have been hungry, and if it possessed the power of charming, it would undoubtedly have employed its powers on such a delicacy as these birds.

When I had finished the dissection, the birds were not to be seen. It was the season when their young were in the nest, and doubtless the conflict which had just terminated, had been waged for the protection of their offspring. Less active birds, venturing as close to the snake, must have been captured and swallowed.

Remaining the most of the summer in the mountains of North Carolina, frequent opportunities were afforded of inquiring of hunters, and others, what they knew about serpents charming birds. All believed that they possessed the power of fascination; and several had witnessed such encounters as I have described; but none had ever seen the snake eat the bird. They had watched until the bird, as they supposed, was trying to thrust its head into the mouth of

the snake, when they had rushed forward and killed it to save the bird from destruction. In all the inquiries made, no instance has been related where there was any more evidence of fascination than in the one now stated. In all cases, however, there was a singular uniformity in their descriptions of the manner in which the birds fluttered around the snakes. So nearly did their accounts correspond with what I had observed, that I was convinced of the truthfulness of their statements.

AMERICAN INVENTIVE GENIUS—PATENT OFFICE REPORT.

THE Reports of the Patent Office are curious exhibitions of one form of Human Development. They exhibit the inventive operation of the Human Mind—not as it would flow out spontaneously—in pursuit of brilliant ideas; but as Invention is used for profit! The time has gone *by* when either literature or inventions are produced for fame, or glory. Poetry has almost ceased to be. Painting languishes. Sculpture exists only in two or three localities; and men make inventions, not as things ingenious or beautiful, but as things that will *pay!* This brief word of three letters—*p-a-y*—expresses now the whole end of human action. *Will it pay?* comprehends the whole practical philosophy of the day. We can not believe that mankind will rise to a higher or purer level by the practice of this philosophy. But, we can not deny that it has done some good. It has enabled men of genius to *live by their wits;* a thing which thousands have always endeavored to do, but seldom succeeded in. Now, when a man of brilliant faculties is nothing but a Professor, Teacher, or Artist, or Clergyman, at a poor salary, he turns his leisure hours to inventing something, for which the public are willing to pay.—Thus, when Stoves begun to come into fashion, we behold President NOTT, of Union College, burning his midnight lamp to make a good Stove, which he does, succeeds, and makes a fortune. Professor OLMSTEAD, of Yale College, does the same, and thus the dream of mathematical theories is relieved by aiding the culinary department.—When rapidity of motion became the order of the day, Mr. MORSE, President of the Academy of Fine Arts, stops painting and invents

a Telegraph, which *pays* better than all the painting since the days of Apelles!

Well, why not? Why should men of letters, of science, and the elegant arts, be compelled to sigh their hours away in penury? At any rate, American genius most emphatically takes the path that will pay. Let any one look into the Patent Office Reports, and he will see hundreds of Inventions of which the object is to make machinery, like Pindar's razors, to *sell*. Sometimes this succeeds, and the sale of Patent Rights, (now an extensive business,) makes their owner's fortunes. This is the case with the patent for Plowing Machines, an exceedingly valuable one.

The sale of Patent Rights is now carried on all over the country, as regularly as any other business. We shall scarcely wonder at this when we consider the immense number of Patents issued. Dividing the number of Patents issued recently into three periods, we have this result:

From 1842 to 1846, inclusive	2,671
From 1847 to 1851, inclusive	4,172
From 1852 to 1856, inclusive	8,406
Increase from first to second period	55 per cent.
Increase from second to third period	100 per cent.

When is this enormous increase to cease! Never! while the chances of drawing a prize in the Patent Lottery is so much greater than in all other Lotteries, and the capital required is so small.—The applications filed in the last year were nearly 5,000. The Commissioner of the Patent Office remarks, that the number of Patents issued in this country is now greater than those granted by the English Office, and the number of applications greater than those made in France! France has 33 per cent. more population than that of the United States, and the French people are by no means dull.—But, the fact is, the United States is the land of enterprise, and there is the place to make Patents profitable. A curious fact is, that nearly all the Patents of this country are for useful purposes. Thus:

Agricultural Machinery	300
Sewing Machines	25
Furnaces, &c	20
Stoves, &c	84

Stoves have occupied mind, quite as much as any one article till recently. But now, Agricultural Machines are all the rage; and well they may be, for they will be of immense service, not merely to agriculture, but to the entire world. For want of labor, agriculture has been flagging. A much larger proportion of persons go to cities

than remain in towns. The result is, that if things remain as they were, the supply of agricultural products must soon fall below the wants of the country. A continued rise of prices, and ultimate danger of starvation would be the consequence. These Agricultural Machines, however, diminish the amount of labor required, and thus do the work of men. The principal Machines of this description, now in use, are the Mowers, Reapers, Harvesters, and Drills. The number of those made in the United States, we do not know; but in Ohio they have increased wonderfully, and the manufacture of Agricultural Machines alone, amounts to millions of dollars! Yet, this whole business is the creation of the last five years. About twelve years since, the public mind was first excited on this subject, by the appearance of McCormick's Reaper. *This* Machine was exhibited in Cincinnati, and found to be successful. It has since been extensively used in Illinois. A few years after, American Agricultural Machines were exhibited at the World's Fair, and found to be more admired than anything else we exhibited. It was just, too, for these Agricultural Machines are found to be doing a great work for the prosperity of this and other lands. Our country is so immense, and the necessity for its cultivation so great, that all the inventive genius of America will be required to produce the Machinery for its cultivation.—*Rail Road Record.*

SUGAR CANE CORRESPONDENCE.

SPACE would fail to record the numerous letters received in relation to the merits or demerits of the Chinese Sugar cane, as an economical production for our northern farmers.

As we have expressed our views freely on this subject, we will subjoin as a fair specimen, extracts from but two as types of all the rest.

The following is from Mr. P. MELENDY, of Cedar Falls, Black Hawk county, Iowa.

"According to promise I send you a few statements in regard to my success in raising and making molasses from Chinese Sorgho, or Sugar Cane.

I had my doubts whether it would ripen in this latitude, (as we are in 42 1-2.) But we have so far succeeded in this vicinity as to

thoroughly ripen the seed. Mr. Hartman, of our place, had seed ripe, planted the first week in June. I planted a small patch about the 15th of June, and on the 30th two acres more for fodder, which has grown sufficiently to make good molasses.

The first patch contained 477 hills, and averaged 6 stalks to the hill, 13 to 15 feet high, amounting to 2862 stalks. The seed had not got fairly ripened before the frost of 29th of Sept. This frost killed the top leaves, but did not hurt the stalk. I pressed these stalks in a Mill made to order, of which I will give a description before closing. The 2862 cane-stalks made 163 gallons of juice, which made 24 gallons of molasses, this would be 17 stalks to the gallon, and 4 1-4 stalks to a quart. I pressed from two stalks one quart of juice. Taking 7 gallons of juice to make 1 of molasses.—I am now making from the two-acre patch, and find it to turn out better than I anticipated. From 24 stalks we had one gallon of juice, which when boiled down to thick molasses made a little over a pint.

My manner of boiling and clarifying was principally taken from the *Tribune*, with some improvements. I found that it improved the syrup by the following process:—after pressing, I took the juice and strained it through a cloth, and to every six gallons I took a tablespoonful of cream of lime and two eggs. The lime and eggs were put into the juice when milk warm, and then permitted to come to a boil. It was then taken off and after standing fifteen minutes, the scum taken off, and strained again through a cloth, then put into an iron kettle which held three batches, or eighteen gallons, and boiled over a rapid fire till so much water was parted as to cause the thermometer to rise to 240 deg., when immersed in the mess. After it boiled sufficiently, which a person can tell after boiling a mess or two, I strained it again through a flannel cloth. This removes all sediment.

I am satisfied it will be a profitable crop for this latitude, for making molasses, sugar and fodder. It will save to the town of Cedar Falls, alone, from $10,000 to $15,000 a year. Experiments have been made at Cincinnati, St. Louis, Louisiana and Texas this fall, in a manner which has thoroughly tested the cane for making sugar. Those instances are sufficient to set at rest all doubts as to whether the syrup derived from the Chinese Cane will granulate or produce sugar of commerce.* There is no waste to this valuable plant. I

* To corroborate which, the reader is referred to Prof. Belcher's article as quoted in our article on the Sorghum!

have tied the leaves in bundles and put them away for future use.—The begass or waste, or stalks, I feed to my hogs. They are very fond of them. I have used a considerable quantity for fuel after it has dried.

I believe that one acre sown broadcast, would yield a large amount of fodder, and sufficient molasses and sugar for any farmer's family for a year.

I will give you for your next number more items if you wish.—I shall test the sugar properties next week.

P. MELENDY."

The following is from a correspondent in Portland, Ioni county, Michigan.

"BR. CARY:—I have just concluded my experiment on the Chinese Sugar Cane. I planted on the 20th day of May, six square rods in the parsonage garden, on a warm soil, about four feet one way and three the other, and then planted a hill of beans between each hill of cane. The spring was cold and backward, and it grew slow the fore part of the season, but our season was so favorable through the summer that it grew fast. The seed did not get ripe, or but a very little of it. I rolled it through a machine made for the purpose, on the plan of the old fashion cider mill, put it once through, and had, say, twenty-five gallons of juice. I then cleansed with eggs and lime-water, and then boiled down to thinnish syrup; cooled, and then cleansed again with eggs and milk, and boiled to thick syrup. I had, say between four and five gallons of good thick syrup. I know it was clean, but it does not taste right, it tastes of the stalk; somehow there is not n-i-g-g-e-r enough about it, or if you like the phrase better, of southern climate. I have put it in a crock in the cellar, hoping that age will make an improvement on it. So I have, as the result of my experiment, between four and five gallons of syrup and a full *gospel* bushel of beans from the six square rods of land. Beat that, if you can.

PORTLAND, Oct. 25, 1857. W. W. JOHNSON."

THIS world is a great slate, and Time's forefinger is never idle.—No matter what we write or where we write it, Time is sure to find, and moss, or stain, or crumble, or bury it altogether.

CORRESPONDENCE OF THE CINCINNATUS.

BY A TRAVELING AGENT.

FAYETTE, RUSH, DECATUR AND BARTHOLOMEW CO'S, IND.

LEAVING Laurel, Ind., my course was now through portions of Fayette, Rush, Decatur and Bartholomew counties. At Columbia, five miles west of Connersville, and a considerable section surrounding the hill on which the small town stands, the country is rolling and the soil adapted to wheat. The trustees of the township, composed of leading farmers representing the several districts, were assembled at the time for consultation in regard to keeping up their schools. Being introduced to the meeting by H. Mason, Esq., one of their number, I was soon familiar with them all, and was much pleased to observe the promptness and anxiety the gentlemen manifested to co-operate, in every good work, for the advancement of practical education. The districts were both willing and desirous, in addition to what the state afforded them from the Common School fund, to pay liberally, in order to have first class teachers among them—an appreciation of talents, certainly highly commendable.—Mr. GEO. SCOTT, a Scotsman by the way, and a noble specimen of the Grampian hills of dear old Scotland, Dr. HUTCHINSON, an old pupil of Doct. DRAKE'S, the COTTONS, T. V. FREEMAN, Esquire MASON, and many others there, are enterprising farmers, true lovers of its science and of educated labor. Spending the Sabbath in their midst, I record, with gratitude, the pleasing acquaintance formed, and look forward, with them, to "the good time coming."

Descending from the above place into a more level country—and level, alluvial soils every where abound in the state of Indiana—I found beautiful farms on either hand. Near to the neat little town of Fayette, on the road to Rushville, lives Rev. J. P. THOMPSON, who devotes no little attention to science, and is much interested in the progress of Farmers' College. Farther on, by invitation, I staid the night and had a pleasing chat on Agricultural proceedings, with the President of the Rush Co. Agricultural Society, Mr. JOHN MEGEE, a true Kentuckian, and a great admirer of the "blue grass." He took me over his fine farm of 500 acres. I found his open woods,

were where large herds of cattle and sheep feeding, quite similar in appearance to its Kentucky prototype. What by draining and attention, the flat soils of Indiana he thinks peculiarly adapted to the blue grass and the raising of stock. It pays also to rear from the best breeds. Mr. M. has some very fine. His horticultural taste, too, fruit orchard, lawn, dwelling, milk-house, barns, etc., though originally built of logs, give evidence of enterprise and refinement, remarkable in a man of so limited educational facilities. A subscriber to the *Cincinnatus* and many valuable publications, it is his intention, though late in life, to understand more thoroughly his favorite occupation, and be able to transmit to posterity the advantages accruing from his tilling of the soil. Mr. THOMAS N. LINK, his son-in-law, living beyond him, has also a fine farm of 300 acres, and is paying still more attention to fruit culture.

Rush county contains a large number of excellent farmers, many of whom are considerably scientific; among them may be reckoned the Messrs. Patton, Root, Thomas and Winship, in the neighborhood of Milroy. This Fall, their Fifth Annual Agricultural Fair was had, the first since it became a stock company, to which there had been over $2,000 subscribed. Their grounds, just out of Rushville, are very appropriate, comprising bluffs, amphitheatre, three wells, substantial buildings, etc. The town itself wears a very flourishing appearance, having four churches, county buildings and business houses, generally built of brick, of tasty architecture. The Carr House, a new and beautiful hotel, five stories high, 56 by 70 feet, situated on a prominent corner, at convenient distance from the R. R. Depot, is worthy the traveler's regard.

Greensburg, Decatur Co., is another thriving town, where a very expensive Court House is being built and when completed will be the best in the State. Attending the Fair—exhibiting products of wheat and fruit from Farmers' College, abundant evidence was given by the gentlemanly officers, directors and members of the society, of a true appreciation of our Agricultural College and its appliances.—Diplomas were awarded for the White Pirk Wheat and Fruit of the Farm Department. The Messrs. Hamilton, Mr. Pleak, the president of the Agricultural Society, Mr. Adams, the secretary, J. D. Wilson, Esq, the ex-president, the Lewis's, Messrs. Bowers, O'Byrne, Barger, Lowry, and others in the county, are among the best class farmers, who feel concerned for the welfare of our institu-

tion and are subscribers to the *Cincinnatus*. The Messrs. Lewis are engaged on the outskirts of the town, in the Nursery business, and are worthy of extensive patronage for their pains-taking in furnishing the best class of Fruit Trees. As pomologists in the county, they took first premiums.

Indeed the display at the Decatur County Fair was a very fine one, both in stock and products—the ladies contributing their share.—Ex-president Wilson and his lady, it seems, are much in the habit of carrying off the palm. Mr. W. has the second premium for best cultivated farm and improved stock, and his lady took seventeen premiums on pickles, preserves, etc. Mrs. J. Goddard was equally successful, however, in obtaining as many for her handiwork. A pumpkin-squash on exhibition weighed 204 lbs. A Mr. Barnes in town, who is quite a genius, takes $10 premiums every year on a gun of his manufacture, said to be worth $100—a new way of getting the interest of one's money. What a relief it would be if many ingenius affairs, we wot of, that won't "go off," could be made to bring the interest of the money invested as easily!

In Bartholomew county are also some superior Agriculturists and very excellent lands. In the vicinity of Hartsville, the seat of the U. B. University, are several enterprising men—Wm. Fix, Enoch Richmond and others—the go-aheadative kind, with neighbors who begin to discover some difference between scientific farming conducted by men who *read*, and "the way father farmed his old farm," in whose steps they have been treading. "Yes," said Mr. R., "they are so ignorant as to believe my success is owing to some *secret* art, and are offering to purchase it. The true secret is in informing the mind, which," said he, "they don't do." I find plenty of that class, not only in Hoosierdom but elsewhere.

Another class are so conceited as not to be taught any more. In an adjoining town, one sneeringly turned up his vegetable nose and said, "*you* gentry come out here from the city to teach us farmers! You had better stay at home;" followed by a hyena-laugh from his compeers and a half dozen gawking children, giving evidence of their not so much as seeing, let alone reading, a book very often.

A few hundred yards from Clifford, on the Columbus & Shelbyville Railroad, I "put up" with Col. T. G. LEE, a noted farmer in the county, owning some hundreds of acres of excellent land. He has the best Osage Orange hedge of any I've seen. It was three years

old last April, and at this time—in September—it wore the appearance of a well-trained and perfect hedge of a dozen years standing; no pig, not even a bird could get through it. While his neighbors are allowing theirs to go to ruin and decry the Osage on every hand, he is satisfied that they might meet with the like success to himself by pursuing the same plan; and, as I could see, it was alone attributable to his "digging about it" and thorough pruning. In other words, he removes the fence away from it, plows up and manures the ground upon either side; thus giving it a chance to grow; and using the "pruning shears" thoroughly, as often sometimes as once a month, it grows thick from the bottom, up and as high as he desires That around his orchard was complete—about two feet thick, four feet high and strong enough to resist stock of any kind. The colonel remarked that he should take away his outside fencing entirely the ensuing spring.

There are many other excellent farmers in the vicinity, whom I found intelligent and much pleased at the strides made and making in Scientific Agriculture. So was it, too, in an opposite direction from Columbus, the county-seat, in and near to the little towns of Walesboro' and Waynesville, both situated on the Indianapolis & Jefersonville Railroad. Here, Mr. Edw. Oyler, a respected relative, kindly aided me in getting several subscribers to the *Cincinnatus*, which with our educational operations are being highly appreciated by him and his neighbors. I owe it to his kindness that my horse found a respite in the daily routine of my traveling agency while in attendance upon the Ohio State Fair, and spending a few days at home.

W. H. O.

AN ETHNOLOGICAL INQUIRY CONCERNING THE ABORIGINAL RACES OF AMERICA.

NO. III.—UNITY OF THE AMERICAN RACES, PROVED BY A COMPARISON OF THE GENERAL STRUCTURE, AND CHARACTER OF THE ABORIGINAL LANGUAGES.

Before proceeding to the discussion of the question indicated in our caption, we will premise by a few general remarks on languages,

An important distinction should here be made in the outset, between those generic characteristics which belong to the very constitution of all human speech the world over, and mere specific differences, which are peculiar only to a single dialect,or family of tongues. Without this distinction, a true analysis of the subject is impossible, and instead of arriving at a correct classification, we lose ourselves in the midst of a synthesis vague and indefinite.

Languages, which represent the very fiber of human thought, if we may be allowed the expression, are organisms formed upon the same general skeleton or basis. This results from the fact, that mind and thought are governed by the same uniform laws, in all countries, and during all eras of human progress; because from its very constitution, mind must ever be identical with mind, in all its various phases and manifestations, throughout the entire universe of thought and intelligence.

But with this general admission, it is also true, that each genus or group of tongues, and more especially, each species of these several genera, evolves special peculiarities of its own—shapes for itself, fortuitously it may be, the path of its own determinate career, and rushes on anomalously, and in a course erratic beyond the self-exaggerated astuteness of mathematics to predict, to its own particular destiny. All possess among themselves certain analogies, which are made evident upon comparing one family with another—and two groups which have a given characteristic in common, differ through some other idiosyncrasy, which, notwithstanding, links one of them to a group still more remote.

Upon examining the structure of the aboriginal languages of America, we find a resemblance even more striking, than that drawn in our former articles, from a comparison of ancient and modern crania, and the uniformity of the physical type of the various populations of the New World. Philologists, whose business it is to try speech in the crucible of logical analysis, assure us, that in its original conception, it must have been first fashioned and brought into being by a superior degree of reason and intelligence. But here, in the two Americas, we encounter a group of languages in their structure, similar, *une* and, homogeneous, bearing on their very texture, both warp and woof, the make of undoubted antiquity, to which even at the hight of their development, our Anglo-Saxon processes of logic and analysis are unknown.

This remark intended to include all, even the stunted Esquimaux, the Hyperborean, from the frozen North, to the half-clad Fuegian, a being sunk down to zero in the scale of human intelligence, and by geographical position shoved out to the very terminus of existence, shivering "*at the little end of the Horn*," where the waves of three oceans meet and wage eternal warfare, to the wild music of crashing icebergs, and the din of the ever-rolling surf.

To the Indian tribes, thought presents itself under a form confused and complex, in which the mind has no consciousness of the elements of which it is composed. Sensations succeed each other so rapidly, that memory and speech, instead of reproducing their signs separately, reflect them altogether in a simple expression. Each expression is a complete organism, of which the parts are not only appendices of one another, but are often enclosed within each other, or are tightly interlocked, or imbricated to such a degree, that one might compare them to blades of herbage in a grass-plat.

For instance, when a Delaware woman is playing with a little dog or cat, she will frequently say: "Kuligatschis!" that is: *Give me your pretty little paw, !* or *What a pretty little paw you have!* This word is thus compounded: "*k*" inseparable pronoun, rendered thou, or thy: "*ali*" (pronounced oolee,) part of the word "*wulit*," signifying handsome, or pretty: "*gat*," part of the word "*wichgat*," meaning leg, or paw: "*schis*," (pronounced schees,) conveying the idea of littleness, and by a different gesture she either indicates a command, or expresses admiration.

In the same manner "*pilape*," a youth, is formed from "*pilsit*," chaste, innocent and "*lenape*," a man. It is difficult to find a more elegant combination of ideas, in a single word of any existing idiom.

Indeed, the multitude of ideas, which in the American languages are combined with their verbs, has justly attracted the attention of the learned in all parts of the world.

For example, when two verbs with intermediate ideas are combined together into one, as in Delaware: "*a' schingiwipoma*," *I do not like to eat with him*, or according to the idiom Chili, "*iduancloclavin*," *I do not wish to eat with him*, there is sufficient cause to wonder, particularly when we compare the complication of these languages, with the simplicity of the Chinese and its kindred dialects in the Old World; from which the Monogenists, or advocates of the doctrine of the Unity of the Human Species, also claim that they were derived

and hence, as a matter of course, it would follow, that the Aborigines too, speaking these languages, were also of Oriental origin, which would seem to be an absurd conclusion, reasoning by analogy.

But this seeming incompatibility may be reconciled, when we consider that the history of all languages is but the continual march from synthesis to analysis.

The Oriental languages, may have originally been quite as much agglutinated, or polysynthetical in their structure, at the time of the alledged emigration of the Aborigines to this continent, as any Indian tongue now spoken in America. But the time required for such a change, would evidently be a margin of many thousands of ages, a period too vast for any definite calculation, simply from the elements of speech.

But then, no good reason could be assigned why a change should not also take place in the derived languages and in the same direction, as well as in the mother tongue. History, it is true, gives us numerous instances of a first idiom giving place to a vulgar tongue, which finally entirely supplanted it as a vernacular in its second phasis, and that too at a period much more analytical; but never once do we hear of one branch progressing, while the other remained stationary, or pursued an entirely opposite, or perhaps a retrograde course.

In cases of this kind, where the primitive tongue was over-loaded with flexions, in order to express the more delicate relations of thought—richer in images, though perhaps poorer in ideas, the modern dialect became clearer—more explicit—separating that which the ancients crowded together—breaking up the mechanism of the ancient tongue, so as to give to each idea, and to each relation, its isolated expression.

M. DU PONCEAU has summed up the general results of his laborious and extensive investigations of the American languages, in the three following propositions, viz: 1st, "That the American languages in general, are rich in words and in grammatical forms, and that in their complicated construction, the geatest order, method, and regularity prevail." 2d, "That these complicated forms called *polyynthetis*, or *olophrastic*, appear to exist in all those languages, from Greenland to Cape Horn." 3rd. "That these forms appear to differ essentially from those of the ancient and modern languages of the Old Hemisphere."

J. P. E.

OUR ENGRAVING—FORT WASHINGTON.

THE memory of other days and past scenes, are often rendered more vivid by presenting to the eye some prominent object of the panorama, landscape or scene represented, thus starting into new life, thoughts and associations supposed to be forever buried in oblivion. Such will be the case in viewing, after long absence, the village church, the old school-house, the favorite walnut or apple tree of childhood years.

To the pioneer of Cincinnati, the Frontispiece of our present number will strike the eye with no common interest, and to him this rude block-house will be peopled with forms and images, widely different from those who look upon it for the first time, but even to such it is not without interest in the fact that all love to dwell upon pleasant and striking contrasts.

All who read and reflect, will be astonished to know that this rude work erected for defense was one of the most prominent objects on the site which Cincinnati occupies but a little more than fifty years ago. Such astonishing progress—such wonderful results—but few can realize, yet there are many still living who have witnessed the whole.

Fort Washington was constructed by Major Doughty who arrived with his troops from Fort Harmar in the year 1790, and was the most extensive and important military work in the territory, belonging to the United States at that time.

Prior to the treaty of Greenville, which established a permanent peace between the United States and the Indians, but few improvements had been made, of any description; and scarcely one of a permanent character.

In Cincinnati, Fort Washington was the most remarkable object. This structure stood between Third and Fourth streets, east of what is now Broadway, which was then an alley of two rods wide. This was the eastern boundary of the town, as originally laid out. It was composed of a number of strongly built, hewed-log cabins, a story and a half high, calculated for soldier's barracks; some of them, more conveniently arranged, and better finished, were intended for officers' quarters. They were so placed as to form a hollow square of

ground, with a strong block-house at each angle. It was built on large logs, cut from the ground on which it stood. The artificer's, yard was an appendage to the Fort, and stood on the bank of the river, immediately in front. It contained about two acres of ground enclosed by small contiguous buildings, occupied as workshops and quarters for laborers. Within the enclosure, there was a large two-story frame house built for the accommodation of the Quarter Master General, which was the most commodious and best finished edifice in Cincinnati at that time.

For a time quite a rivalship existed between the stations at Columbia, Losanteville* and North-Bend, as to which should have the pre-eminence and become the site of a future city. And in this, as often in more important events, circumstances the most trivial weave the web of destiny and ultimate in most important developments.

The pen of the historian records that the settlement of this point was brought about through the *bewitching fascination* of a little black-eyed girl, removing with her father from the Bend, on account of the greater security afforded at Fort Washington. Thereby was the gallant commander led to think this was, by far, the site to be prefered. And this cause, however unimportant in itself, settled the disputed question as to the site of this great commercial emporium. Not so strange, either, when we remember that it was the incomparable beauty of a Spartan dame that once produced a ten years seige, which terminated the fate of Troy. After this we need not wonder that the irresistible charms of another captivating American, Hellen should have resulted in the unsettling of a station fixed upon as the location of a great city.

These Forts were viewed with great jealousy by the Indians, as they had the appearance of permanent military establishments, and it was extremely fortunate that the Indians were without the skill or the means of demolishing them; and while they might have easily prevented their creation, they were led to think they would be attended with no serious consequence to them, and under this conviction did not act, until it was too late to do so with effect.

How different the circumstances under which the first pioneers came to these then distant wilds of the West, and the adventurers of

*This was the name given to the first villiage occupying the present site of Cincinnati. A fanciful name, which when analyzed signified *ville*, the village *ante* opposite, *O S* the mouth *L* Licking.

the present day. Then they came over the mountains with pack-horses, and paddled down our rivers in frail canoes, or on rude rafts. Then, to go into the wilderness, was an adventure beset truly with perils and dangers, and not unfrequently to meet death by the unrelenting hand of the savage, while to remain in the settlements they were threatened with starvation.

Oft did they go to their fields with their gun in one hand and their hoe in the other. Frequently some dozen families would unite, and erecting a strong block-house to their cabins, would enclose it with pickets. Often while they were at work clearing their lands and planting, they would appoint one as sentinel, to warn them of approaching danger. At sun-set they would retire to their block-house and cabins, taking every thing of value within the pickets.

In this manner they proceeded from day to day and week to week, till their improvements were sufficiently extensive to support their families. Their support was frequently very precarious, depending mostly on wild game, and scanty supplies brought by pack-horses, at a heavy expense, amidst great danger.

To be a pioneer in those days required no small amount of fortitude and decision. And when we trace the history of those gone, from the lips of the few who survive their hardships—we become fully convinced that they were men adequate to the occasion which brought them hither and the effecting of results such as we see.

It will be our purpose to spread before our readers from time to time, biographical sketches of some of those pioneers, and as far as possible gather from the lips of those who survive such incidents as may be of interest to those who now fill many of their places, and still more, to those who may come after. There can be no reading more profitable to the young of the present generation, than the accounts of the trials and hardships of their fathers in the first settlements, of their simple manners and stern virtues, of their perseverance and courage, of their industry and its rewards. Nothing will tend more to stem the current of luxury, effeminacy and vice, setting in before us like a flood, than to teach our sons and daughters to respect their memories and imitate their example.

The blandishments of wealth, luxury and fashion must be resisted, and the integrity, simplicity and industry of our fathers must be followed, if our country is still to prosper and her republican institutions be maintained.—Ed.

THE SORGHUM AND IMPHEE.

EXPERIMENTS OF LEONARD WRAY, ETC., AS GIVEN IN AN EXTRACT OF A LETTER FROM EX-GOVERNOR HAMMOND OF SOUTH CAROLINA.

FROM unwonted delay in the issue of our December number, the leading article of which, on the *Sorghum* was prepared over a month since, we are permitted to report something definite on this subject, from a source to which all have been looking with intense interest, and many with sanguine hopes and expectations of success.

Ex-Governor Hammond of South Carolina, late elected Senator to the United States Senate, it is well known, is extensively engaged in the culture of the Sorghum as well as the Imphee. Leonard Wray who has published a work claiming to have discovered a secret process by which the Imphee *at least*, could be readily crystalized, has been operating with all the skill of which he is master, under the most favorable circumstances, on the plantation of Governor Hammond.

The letter referred to, is in the following terms. It is conclusive and fully corroborates our views and experience.—ED.

"The Imphee was quite a disappointment; I gave it, I think, a pretty fair trial. We did not make any sugar from it. I do not think there is much in it, or in Sorgho, that will crystalize. For sugar, we may as well count it out. But it will make a beautiful syrup, and one that will make a better substitute for sugar, than molasses. It will not make so much as I expected; we repeatedly obtained two gallons of juice from ten selected canes; yet on the whole we can hardly do better than make one hundred to one hundred and fifty gallons of syrup on an acre. As forage, it will not fatten alone; but it seems to improve the health of all animals, they get sleek, and young ones grow rapidly. Add a little corn, and they fatten and puff up immediately. My carriage-horses from eating a few stalks cut up, every day, look as if they were just from the Kentucky clover-fields. Altogether, this is a very valuable plant and I would not be without it on any account. I can't tell which is the best variety. I shall plant all, and the Sorgho next year, and make a thorough trial."

LONGEVITY OF SEEDS.

LONG since, the British Association appointed an important committee on this subject. Dr. Daubeny read their report at the last meeting held in Dublin, in September. They state that after planting year after year all the seeds they were able to collect, they had now left but four species of plants whose seeds continued to grow. These were seeds belonging to the species Ulex, Delichos, Malva, and Ipomea. The results are curious and interesting, and valuable for reference. The register of every experiment was exhibited with the details kept by Mr. Baxter of the Botanic Garden. From this register it was seen that the shortest period for which any of the seeds had retained their vitality was eight years, and the longest forty-three years. Grouping the plants according to their natural orders, the following selected, will give some idea of the plants whose seeds retain their vitality longest; Gramineæ, 8 years: Liliaceæ, 10 years; Coniferæ, 12 years; Tilliaceæ, 27 years; Malvaceæ, 27 years; Leguminosæ, 43 years; Rhamnaceæ, 21 years; Boragniaceæ, 8 years; Convolvulaceæ, 14 years; Compositæ, 8 years; Myrtaceæ, 18 years; Umbelliferæ, 8 years; Cruciferæ, 8 years. It would appear that the seeds which retained their vitality longest were those which had least albumen surrounding their embryos, as the Leguminosæ; whilst those which had large quantities of albumen, as the Graminaceæ, lost their vitality soonest. Dr. Steele stated that he had planted many seeds obtained from Egyptian mummies, but always failed to obtain any indications of their vitality. Mr. Moore, of the Dublin Botanic Garden, related an instance in which he had succeeded in producing a new species of leguminous plant from seeds obtained by Mr. John Ball, from a vase discovered in an Egyptian tomb. He also stated that he had picked from out of a decayed elm, at least fifty years old, seeds of laburnum, many of which had germinated when planted, and produced young trees. He had once grown a crop of young barberry trees by planting a quantity of barberry jam, which proved that the process of preparing the jam did not injure the seed. Many seeds grew the better for being placed in boiling water before they were set. Dr. Daubeny stated that seeds did not retain their vitality whilst entirely excluded

from the air; that, in order to keep them well, they should be wrapped up in brown paper, or some other porous material. Mr. Archer stated that the seeds sent from China in air-tight vessels always failed to germinate. Some seeds kept much better than others. Mr. Ogilby stated that some seeds germinated the better for being kept. Mr. Nevins and Mr. Moore both confirmed this statement, and said that gardeners were in the habit of keeping cucumber and melon seeds in their pockets, in order to insure their more efficient germination.

SETTLE DOWN.

NOT contented with old acquirement and satisfied, not to make effort to improve. We have been too restless—feverish—migratory. "Well enough," has not been let alone. Will the lessons of the past ninety day change us? Are we to become wiser and more staid in our habits? Have we been sowing our "wild oats?" One good result that we hope to see growing out of past experience, is that of permanent settlement—the investment of our surplus at *home*, in improvements. We have written before, that before we can become contented and intelligent as a nation of agriculturists, we must learn to love our occupation and follow it rather as a pleasure than a necessity—bring to bear all the resources at our command in the adornment of our grounds, and the cultivation of the beautiful about our homes. We must not only love home because of its beauties, but because of its associations. Those associations must be based upon the hightest intellectual and moral cultivation.

Any thing beautiful is refining to the mind that comes in contact with it, and the surroundings of home are the surest index of the mental and moral character of the family. Religion, with its holy hopes, and beautifying influences, may be read in the arrangement, and care bestowed upon that most loved of all earthly places. We know issue will be taken at this assertion. But there is not one instance in ten, but we can tell the religious character of the farmer by the manner in which he has fitted up his home. Devotion will speak to us through tell-tale nature, if the man loves the God of

Nature. The earnest man and Christian, loves flowers, and their kindred, and his earnestness is exhibited in their care and planting. But we wander.

Material and substantial prosperity will never be ours, until we stop rolling. Changes seldom fail to result in losses. The idler rusts. We do not advocate idleness but contentment with moderate prosperity, when it is sure. Stay at home after you have secured one. We would not be misunderstood. We do not wish to discourage men from searching for a home. It is essential to contentment that there should be some effort and search made for such a place. But we do seek to discourage speculation. It yields no one a benefit without wronging a second party. It is the great bar to agricultural progress. All good farmers should discourage it among their own class. It unsettles the mind, and is seldom known to "settle" any body, unless it be lower in the scale of usefulness, honesty and respectability. Settle down, we say, on a home of your own acquiring, and then rise as a citizen and farmer, by your own effort and integrity. Make a home your children shall cling to, and remember that wisdom is greatly needed in order that unison and peace reign there. A "soft answer" "settles down" turbulent passion, and adds to the self respect of the parents. A general settling down is essential to home happiness.

THE SILENCE OF AN ARCTIC NIGHT.

THE following eloquent description of the silence of an Arctic night occurs in Dr. Hay's lecture on the Arctic regions: "The moonlights of this period (winter) are the most grand and impressive of anything I ever witnessed. The clearness of the air, the white surface of the snow and ice, give an effect monotonous and cheerless, but truly grand. But there is a new element which makes this mid-winter moonlight seem almost terrible in its impressiveness—it is *silence*,

"I have often, to escape from the trying monotony of ship-board life, gone off six or eight miles into the interior in search of novelty, and in order that I might be alone. There, seated upon a rock

or snow bank, I look around me and see a great uneven country, rocky hills and glaciers covered with snow, myriads of crystal gems sparkling in the light of the pale moon, which shoots its rays through the crisp air, making it almost as light as day. I look seaward, and see a long plain of ice melting into the horizon, dotted all over with huge towering bergs—nothing more. All nature is in the repose of death. I am too far from the shore to hear the crunching of the tables as they rise and fall with the tide, or the roar of the distant thunder, as some huge track opens through the heavy floes. There is no animal to cross my path, no tree among whose stiff branches the wind can moan. There is no song of bird to enliven the scene, no wild beast to howl. I stand there alone, the only representative of God's living world—the only being that has life or can move. Every sound that I hear, every motion that I see, is made by myself. I hear nothing but the pulsations of my own heart, my own footsteps, or now and then possibly, in the distance, the deep rumbling of a snow-bank. The sensation of utter loneliness and isolation creeps over me. My heart beats as it rushes the blood through the sensitive organization of the ear; I am oppressed as with discordant sounds. Silence has ceased to be negative; it has become sternly positive. I hear, see and feel it. Its presence is unendurable. I spring to my feet: I plant them heavily in the snow to drown its presence, and I rush back to the vessel, glad to find even refuge in its dull life of horrid inactivity."

SHELTER FOR STOCK.

Many farmers will neglect their animals in winter, feeding them from the stock-yard, in the open air. This practice is not only barbarous, but is very expensive. It takes a third more hay to carry a cow through the winter by this method, and with the best of hay she will not come out in good condition. Warm stables are a substitute for fodder, and an animal sheltered in them is much more easily kept in high flesh. Then, by stabling animals, we can save all the manure, which is quite too large an item for farmers in this age to throw away. Many who have large farms, and do not wish to build a barn large enough to hold all the hay and grain, build several

small barns in different meadows. These save carting, both of hay and manure. In no case should hay be foddered out to cattle without some kind of shelter. A hovel opening to the south can be made very cheaply, and with a light wall and thatched roof, it will keep cattle quite comfortable. They will save the cost of building in a single winter. Now is the time to put them up.

PEOPLE WHO LIVE WITHOUT WATER.

THE day before we reached the Orange River we fell in with a kraal of Hottentots, whom to our great surprise, we found living in a locality altogether distitute of water. The milk of their cows and goats supplied its place. Their cattle, moreover, never obtained water, but found a substitute in a kind of ice plant (*mesembryanthemum*) of an exceedingly succulent nature, which abounds in these regions. But our oxen, not accustomed to such diet, would rarely or never touch it. Until I had actually convinced myself, as I had often the opportunity of doing at an after period, that men and beasts can live entirely without water, I should, perhaps, have had some difficulty in realizing this singular fact.—*Anderson's Four Years Wanderings in Southwest Africa.*

A GOOD LESSON.—At a certain knitting establishment in Troy, says the Worcester (Mass.) Transcript, the proprietor some weeks since informed his hands that he should be obliged to suspend operations, as he had no demand for his goods. The operators avoided a suspension, however, by a method as novel as it was creditable. They ran the mill on half time, and purchased in the afternoon the goods which they had manufactured in the morning, peddling them through the city and vicinity. In this way they have kept themselves in employment ever since.

CINCINNATI HORTICULTURAL SOCIETY.

CINCINNATI, Saturday, December 5.

Vice-President Stoms in the chair. Minutes read and approved.

Report of the Special Committee on Diseases of the Grape was presented and read by Mr. BUCHANAN, and attracted the most profound attention of the Society. On motion the report was received and adopted, with an order for publication. The following is the report in full:

REPORT OF THE COMMITTEE ON GRAPE CULTURE.

At a meeting of the Society, on the 10th of July last, the undersigned were appointed a committee to inquire into the feasibility of grape culture for wine-making, as a *remunerative crop*. and to suggest such remedies for mildew and other incidental diseases of the grape as might be supported by facts. After mature deliberation your committee presents the following as the result of its investigations:

That the crop may be made amply remunerative in this vicinity and elsewhere, in positions favorable for its cultivation, *there can be no doubt*. The experience of many years by numerous cultivators has decided this question beyond a cavil. The best proof in support of this assertion is. that grape culture is now wide-spread throughout the West and South-west, and largely on the increase. For every vineyard abandoned from bad position, caprice or carelessness, twenty new ones are planted. That the crop—like most other crops—is subject to casualities, no one will deny; but experience has proved it to be as reliable as the apple, the hardiest of all our fruits. Even this year—the worst for mildew and rot that we have ever had—a majority of our vineyards in this vicinity will more than pay expenses, and a few will yield a handsome profit, while a small number prove almost an entire failure. In Missouri, the vintage this year is the best ever known in that State—some of the vineyards producing over one thousand gallons to the acre; and in Georgia, even after injury from late spring frosts, the yield is very good. It is *estimated* that in this region vineyards favorably situated will average, for a series of years with ordinary attention, two hundred gallons to the acre. It is *known* that one hundred gallons per acre will more than pay expenses. From these data the crop would appear to be remunerative.

The great enemies to grape culture in this climate are the diseases known as the mildew and the rot, both closely allied, and both arising from atmospheric changes. A sudden change of temperature will produce mildew, in the form of a white powder, on the newly-formed bunches of grapes, and at a later period the rot, when the berries are almost full grown, is caused by the fungi known as the mildew, settling on the pedicel of the berry, and on the berry itself. discoloring and destroying it. In a brief report like the present, it would be useless to attempt a detailed scientific description of these diseases, for they are well known to all vine-dressers. And the committee regrets to state that no certain remedy has yet been discovered for their prevention or cure.

On gravelly or sandy soils, or porous or well-drained subsoils, these diseases are less prevalent than on strong clay lands, and hill sides are preferable to level or gently undulating positions. But no position has been found entirely free from them; nor has any kind of special cultivation or of pruning, after many experiments, been successful as a remedy.

From all the information the committee has been able to collect, both in this country and Europe, an application of *sulphur and lime*, according to the annexed directions promises to be more successful than any remedy yet tried. In France it is said to have succeeded this season in preventing the ravages of the "Oidium," a disease similar to the rot; and a member of this society, Wm. Orange, tried it on a portion of his vineyard with marked success. Vinedressers are earnestly requested to give it a fair trial, and report progress at the end of the next season.

R. BUCHANAN,
S. MOSHER,
M. KELLY, } Committee.

CINCINNATI, December 3, 1857.

Recipe for the Use of Sulphur and Lime.—Put half a bushel of unslacked lime and ten pounds flour of sulphur in a forty-gallon barrel, add five or six gallons scalding water, and keep stirring it till thoroughly mixed; then fill up the barrel with cold water, and cover up tight till wanted for use. This mixture syringed over the young bunches of grapes shortly after they are formed it is said, will prevent mildew; and again when the berries are nearly full grown, an application in the same manner may prevent rot.

The flour sulphur alone is applied by dusting it over the bunches of grapes, and on the ground under them, at about the same periods of their growth, and omitting to syringe with the sulphur and lime-water. Both applications might be tried on a portion of the vineyard to ascertain which is the best—the sulphur and lime, the sulphur alone, or both together.

R. BUCHANAN,
S. MOSHER,
M. KELLY, } Committee.

N. B.—Syringing plum-trees with the sulphur and lime-water, it is said, will prevent the ravages of the curculio.

Mr. Mears, from the Committee on the proposed work of Professor Warder on Fruits, submitted the following Report.

To Dr. JOHN A. WARDER, President Cincinnati Horticultural Society—*Dear Sir:* The undersigned having been appointed a Committee in accordance with the annexed resolutions, to confer with you on the subject of your contemplated work on Fruits, take pleasure, not only in transmitting the resolutions, but in expressing our own gratification in your acquiescence in what is evidently the universal desire of the members of this Society, and also of many others among the most intelligent fruit-growers throughout the West. It is true, our pomological literature has been enriched by the labors of Coxe, Downing, Elliot and others of more recent date, but the Committee are constrained to say in all candor they do not find that increased information in the latter authors that the improved condition of our horticulture demands, and while we would not encourage the public in unreasonable anticipations in regard to the forthcoming work, we cheerfully bear testimony to your ability as a writer and your ample experience in fruit culture, to prepare an accurately descriptive catalogue, and so discriminative as to enable the inexperienced and ardent tree-planter to make such selections as will not be regretted in after years.

Please accept for yourself assurance of our great esteem and regard.

Very truly your fellow-laborers in the cause of Horticulture.

WM. E. MEARS,
R. BUCHANAN,
JOHN P. FOOTE,
S. MOSHER, } Committee.
F. G. CARY,
N. LONGWORTH,
A. H. ERNEST,

CINCINNATI, Nov. 28, 1857.

WILSON'S ALBANY STRAWBERRY.—Nicholas Longworth, of Cincinnati, in a letter to the Southern Cultivator, says—"I had Wilson's Albany Seedling in bearing the past spring. From its bearing this year it appears to have the rare character of being perfect in both male and female organs, and to bear a full crop of fruit of good size."

THE editor of the Woonsocket *Patriot* makes merry over the mistake of an old Shanghai hen of his that has been "setting" for five weeks upon *two round stones and a piece of brick!* "Her anxiety," quoth he, "is no greater than ours, to know what she will hatch. If it proves a brick-yard, that hen is not for sale."

THE Journal of Commerce published a table by which it appears that during November last there sailed from New-York for Europe, no less than sixty-one vessels with grain on board, amounting, in the aggregate to 1,500,000 bushels.

VERMIN ON ANIMALS.—M. Raspail recommends to make a solution of alloes—one gramme of that gum to a little water—and apply it. It will speedily destroy all vermin on animals or plants, and prevent others from approaching. To clean sheep and animals with long hair, they must be well bathed in the solution. Several trials proved it completely successful.

METEOROLOGICAL TABLE.

Observations made at Farmers' College, College Hill, Hamilton County, Ohio, Latitude 39° 19′, *W. Lon.* 7° 24′ 45″ *for the month of October*, 1857, *by Prof. R. S. Bosworth. Hight of Station above the Sea*, 800 *feet.*

	BAROMETER, CORRECTED FOR TEMPERATURE & CAPILLARITY.				OPEN AIR THERMOMETER.				CLOUDS—COURSE & VELOCITY.						WIND—DIRECTION & FORCE.			RAIN & MELTED SNOW.		
	7 A. M.	2 P. M.	9 P. M.	Mean.	7 A. M.	2 P. M.	9 P. M.	Mean.	7 A. M.		2 P. M.		9 P. M.		7. A. M.	2 P. M.	9 P. M.	Hour Began.	Hour Ended.	Am't Inch.
1	29.093	28.995	29.000	29.030	55.0	70.5	57.0	60.6	2		10	S. W. 8			S. W. 2	S. W. 7	0	7 P. M.	in night	1.080
2	29.008	29.030	29.137	29.058	55.0	58.0	55.0	56.0	10	S. 8	10	S. 4	10		S. 3	S. 2	N. W. 2	11 A.M.	in night	0.020
3	29.190	29.208	29.207	29.210	53.0	61.0	52.0	55.3	10	Fog.	10	mist.			N. W. 1	N. W. 1	N. W. 1	1 P. M.		0.025
4	29.240	29.168	29.200	29.200	52.5	71.5	59.0	61.0	4	Cirri.	1	E. 2	0	0	0	E. 2	0			
5	29.250	29.185	29.195	29.210	55.0	72.0	59.0	62.0	0	0	4				0	N. 1	N. E. 1			
6	29.215	29.165	29.170	29.180	58.5	71.0	52.0	60.5	4	Cirri.	2	Cirri.	1	Cirri.	0	N. E. 2	0			
7	29.190	29.130	29.110	29.142	52.5	62.0	49.0	55.8	0	0	0	0	0	0	0	N. E. 3	N. 1			
8	29.086	29.035	29.010	29.044	48.0	68.0	54.0	56.7	0	0	4	Cirri.	2		0	0	0			
9	29.045	28.995	29.025	29.020	54.0	72.0	60.0	62.0	0	0	1	Cirri.	0	0	0	N. E.	0			
10	29.075	29.045	29.100	29.075	50.0	72.5	56.0	59.6	0	0	0	0	0	0	0	0	E. 1			
11	29.092	29.030	29.037	29.053	53.0	73.0	62.0	62.7	0	0	0	0	0	0	E. 1	E. 1	0			
12	29.080	29.080	29.140	29.100	62.5	69.5	65.0	65.7	10	S. W.	4	Nim.	10	S. W. 6	S. 1	S. 1	0	10 Pi M.		
13	29.185	29.155	29.160	29.166	60.0	66.0	59.5	61.8	10	N. E. 4	10	N. E. 5	10		N. E. 1	S. W. 1	N. 1		7 A. M.	0.325
14	29.113	29.090	29.096	29.100	62.0	61.0	54.0	59.0	5	N. E. 2	10	N. E. 4	10	Haze.	N. E. 1	N. E. 1	N. 1	in nght.	6 A. M.	0.500
15	29.910	28.800	28.765	28.885	44.7	63.0	44.0	50.6	0	0	0	0	10	N.W. 8	0	S. 2	N. W. 7	7 P. M.		
16	28.808	28.965	29.145	28.972	39.5	57.0	43.0	46.5	10	N.W. 5	10	N.W. 2	0	0	N. W. 2	N. W. 3	0		8 A. M.	0.490
17	29.240	29.205	29.285	29.246	38.0	59.5	48.0	48.5	0	0	0	S. W.			0	S. W. 5	S. W. 2			
18	29.370	29.245	29.185	29.260	47.0	65.0	55.0	55.6	8	S. W. 6	1		10		0	S. 1	0			
19	29.105	29.110	29.258	29.158	54.0	56.0	42.0	50.7	10	S. W. 5	5	N.W. 7	1	N.W. 5	S. W. 4	W. 2	N. W. 5	last night.	10 A. M.	0·115
20	29.445	29.435	29.430	29.436	29.7	42.5	32.0	34.7	0	0	0	0	0	0	N. W. 1	N. W. 1	N. W. 1			
21	29.468	29.370	29.385	29.306	26.0	50.0	35.0	37.0	0	0	0	0	0	0	0	S. W. 1	0			
22	29.390	29.270	29.285	29.315	38.5	55.0	47.0	46.8	5	Cirri.	10				S. 1	S. W. 1				

23	29.256	29.220	29.218	29.230	48.0	61.0	52.5	53.5	10	S	10	S. W.	10		S. 1	S. 1	00			
24	29.176	29.053	28.975	29.068	48.5	62.0	48.0	52.8	10	N.W 5	2	S.W.5	10	Nim.	N. W. 2	S. W. 2	N. W. 6	5 P. M.	9 P. M.	0.280
25	28.930	29.063	29.080	29.024	45.0	68.0	45.5	52.8	10	N.W.7	10	N.W.5	2	N. 6	N. W. 4	N. W. 5	N. W. 1			
26	29.110	29.070	29.062	29.080	44.0	51.5	41.0	45.5	10	N W 5	0	0	1		N. W. 4	N. W. 2	N. 1			
27	29.083	29.025	29.030	29.046	30.0	49.0	35.0	38.0	10	N.E.1	0	0	4	S.W.5	N. E. 3	N. E. 1	0			
28	29.988	29.947	29.015	29.000	51.0	51.5	41 5	48.0	9	N.W.5			10		0	N. W. 2	0	6 P. M.		
29	29.066	29.035	29.057	29.052	40 0	45.5	39.5	41.3	10	N W 4	10	N.W.4	10	N.W.4	N. W. 1	N. W. 2	0		Last night	0,060
30	28.996	28.924	28.952	28.957	38.0	47.5	34.0	39.8	10	S.W.6	10	W. 5	0	0	S. 1	S. W. 1	0			
31	29,018	29.005	29.043	29.023	33.0	45.0	43.0	40.3	5		3		5	S.W.2	0	0	0			
Sums.				903.593				1621.0												2.870
Means.				29.116				53.6												

REMARKS ON WEATHER.

9. Very fine weather.
11. The woods are putting on their autumnal dress.
12. Driving mist and fine rain this morning.
15. Wind commenced with great violence at 3 P. M.
19. Cleared off about 4 P. M.
21. Min. Ther. 24.°
28. A slight shower this morning at 7.

EXPLANATION.—The state of the sky is indicated in this table by numbers from 0 to 10; 0 signifies perfectly clear sky. 10 that it is entirely covered with clouds, and intermediate numbers show the number of tenths clouded. The direction from which the wind blows is shown in the initials of the points of the compass. Its force is indicated by numbers; 0 meaning a perfect calm, and 10 the most violent hurricane.

MONTHLY EXTREMES.

	MAXIMA.				MINIMA.			
	7 A. M.	2 P. M.	9 P. M.	Month.	7 A. M.	2 P. M.	9 P. M.	Month.
Barometer, . . .	21st. 29.468	20th. 29.435	20th. 29.430	29.468	16th. 28.808	15th. 28.800	15th. 28.765	28.765
Thermometer . .	12th 62.5	11th. 73.0	12th. 65.0	73.0	21st. 26.0	20th 42.0	1st. 32.0	24.0

AN AGRICULTURAL ODE.

BY WM. C. BRYANT.

Far back in ages
 The plough with wreaths was crowned,
The hands of kings and sages
 Entwined the chaplets round,
 Till men of spoil
 Distained the toil
 By which the world was nourished,
And blood and pillage were the soil
 In which their laurels flourished.
Now the world her fault despairs—
 The gilt that stains her story,
And weeps her crimes amid the cares
 That forms her earliest glory.

The throne shall crumble,
 The diadem shall wane,
The tribes of earth shall humble
 The pride of those who reign;
 And war shall lay
 His pomp away;
 The fame that heroes cherish,
The glory earned in deadly fray
 Shall fade, decay and perish.
Honor waits o'er all the earth,
 Through endless generations—
The art that calls the harvest forth,
 And feeds the expectant nations.

It has been said that grain is treated like infants. When the head becomes heavy it is cradled; and is generally well thrashed to render it fit for use.

The telegraph now in operation in the United States consumes annually about $60,000 worth of zinc, $10,000 worth of nitric acid, and $30,000 for mercury, besides other sums for sulphuric acid, &c.

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Among their publications may be found the following, to which they would respectfully invite attention. To these it is their intention to add the best works of the Standard Historical and other authors, and they trust that their selections will be such as to entitle them to a liberal share of the patronage of the book-buying public.

DR. ADAM CLARKE'S COMPLETE COMMENTARY ON THE OLD AND NEW TESTAMENTS.

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From the Nashville and Louisville Christian Advocate.

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"Of the merits of this work we need not speak, as its fame is as wide as the world of language in which it is written, and as imperishable as the name of its author; but of this edition we may say a word: It consists of four super-royal octavo volumes, two of the Old, and two of the New Testament. The type is clear, printed upon a beautiful white paper, of superior texture, bound in a strong and substantial manner, with marbled edges. The first volume of the Old Testament contains a superior steel engraving of the author. The last volume contains the usual copious alphabetical index, while the entire work is embellished with the usual number of tables and maps. Upon the whole, this is an excellent and cheap edition of this great work of this great man."

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From the Presbyterian Review, Edinburg.

DICK'S WORKS.—Those who read at all, know both the name of Dr. Dick and the work itself, now reprinted. It has long found acceptance with the public.

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We hail this remarkably cheap and greatly improved edition of Dr. Dick's admirable and highly popular Works. It is a real love to the millions to be able to purchase such an excellent work for so inconsiderable a cost. We earnestly recommend this work to all our readers, and especially to all who desire to store their minds with general information.

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From the Central Christian Herald.

One hundred and forty years ago, when there were no daily newspapers nor periodicals, nor cheap fictions for the people, the Spectator had a daily circulation in England. It was witty, pithy, tasteful, and at times vigorous, and lashed the vices and follies of the age, and inculcated many useful lessons which would have been disregarded from more serious sources. It was widely popular. It contains some very excellent writing, not in the spasmodic, moon-struck style of the fine writing of the present day, but in a free, graceful, and flowing manner. It used to be considered essential to a good style and a knowledge of Belles-Lettres to have studied the Spectator, and we are certain our age is not wise in the selection of some of the substitutes which are used in its stead. It should yet be a parlor volume, which should be read with great profit.

But we do not design to criticise the book, but have prefixed these few facts, for the information of our readers, to a notice of a new edition of the work by Messrs. Applegate & Co. It is entirely of Cincinnati manufacture, and is in a style very creditable to the enterprising house which has brought it out.

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